

1982

Flathead Drainage

RM-1

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#25081

APPENDICES

IMPACTS OF HUNGRY HORSE DAM ON
THE INVERTEBRATES IN THE FLATHEAD RIVER

FINAL REPORT

by

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APPENDIX A

TAXA COLLECTED JULY 1979 THROUGH MARCH 1981

$\bar{x}$ = mean number/2 s.d. = standard deviation

July, 1979

	Bible Camp Kick (x=5)	Kokanee Bend Kick (x=8)
	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)
EPHEMEROPTERA		
<u>Baetidae</u>		
Baetis tricaudatus	688.2 (612.0)	72.0 (49.5)
Baetis bicaudatus	5.4 (4.5)	0.3 (1.2)
Baetis hageni	55.8 (61.2)	10.2 (12.9)
Pseudocleon sp.	99.0 (83.7)	41.7 (21.9)
<u>Heptageniidae</u>		
Rhithrogena hageni	328.2 (364.2)	90.9 (38.7)
Epeorus albertae	78.0 (31.5)	18.3 (14.7)
Cinygmula sp.	45.6 (39.3)	36.9 (27.0)
Stenonoma sp.	0 (0)	0 (0)
Small Heptageniidae	0 (0)	9.3 (12.3)
<u>Ephemerellidae</u>		
Ephemerella doddsi	36.0 (24.6)	13.8 (15.0)
Ephemerella inermis	0.6 (1.5)	7.2 (6.6)
Ephemerella tibialis	90.6 (60.6)	12.3 (10.8)
Ephemerella flavilinea	18.6 (15.6)	6.9 (5.7)
Ephemerella heterocaudata	0 (0)	1.2 (1.5)
<u>Leptophlebiidae</u>		
Paraleptophlebia heteronea	4.2 (5.1)	1.8 (2.1)
PLECOPTERA		
<u>Pteronarcidae</u>		
Pteronarcella badia	49.8 (57.3)	34.8 (19.8)
<u>Perlidae</u>		
Classenia sabulosa	6.0 (10.2)	2.1 (3.6)
Hesperaperla pacifica	4.8 (4.5)	2.1 (5.1)

July, 1979 Cont.

	<u>Bible Camp</u>		<u>Kokanee Bend</u>	
	<u>Kick(x=5)</u>		<u>Kick(x=8)</u>	
	$\bar{x}(s.d.)$		$\bar{x}(s.d.)$	
<u>Perlodidae</u>				
<u>Kogotus modestus</u>	0.6(1.5)		0 (0)	
<u>Small perlodidae</u>	38.4(30.6)		83.7(106.2)	
<u>Chloroperlidae</u>				
<u>Suwallia sp.</u>	62.4(40.5)		48.0(12.9)	
<u>Sweltsa coloradensis</u>	0 (0)		0 (0)	
<u>Small Chloroperlidae</u>	1.2(2.7)		0 (0)	
<u>Nemouridae</u>				
<u>Zapada columbiana</u>	0 (0)		0 (0)	
<u>TRICHOPTERA</u>				
<u>Hydropsychidae</u>				
<u>Arctopsyche grandis</u>	74.4(45.6)		0 (0)	
<u>Symphitopsyche oslari</u>	82.2(62.4)		6.3(6.6)	
<u>Parapsyche elsis</u>	0 (0)		0 (0)	
<u>Hydropsychidae pupae</u>	4.8(7.5)		0 (0)	
<u>Rhyacophilidae</u>				
<u>Rhyacophila angelita</u>	9.0(9.0)		3.0(1.2)	
<u>Rhyacophila vaccua</u>	0.6(1.5)		0 (0)	
<u>Rhyacophila verrula</u>	0 (0)		0 (0)	
<u>Small Rhyacophila sp.</u>	0 (0)		0 (0)	
<u>Brachycentridae</u>				
<u>Brachycentrus americanus</u>	9.0(7.5)		1.8(3.3)	
<u>COLEOPTERA</u>				
<u>Elmidae</u>				
<u>Optioservus quadrimaculatus</u>	0.6(1.5)		0.3(1.2)	

July, 1979 Cont.

	Bible Camp Kick(x=5)	Kokanee Bend Kick(x=8)
	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)
DIPTERA		
<u>Deuterophlebiidae</u>		
<u>Deuterophlebia</u> sp.	0 (0)	1.5(1.5)
<u>Blephariceridae</u>	0 (0)	0.9(2.1)
<u>Tipulidae</u>		
<u>Hexatoma</u> sp.	7.2(7.5)	0.9(2.1)
<u>Tanyderidae</u>		
<u>Protanyderus</u> sp.	0 (0)	1.5(2.4)
<u>Simuliidae</u>		
<u>Simulium</u> sp.	606.6(798.9)	135.3(218.7)
<u>Chironomidae</u>		
larvae	463.2(183.9)	326.7(213.9)
pupae	10.2(12.9)	6.3(6.0)
adults	0 (0)	3.9(5.1)
<u>Athericidae</u>		
<u>Atherix variegata</u>	0 (0)	0.3(1.2)
<u>Empididae</u>		
<u>Chelifera</u> sp.	1.2(1.8)	2.4(3.6)
<u>Hemerodromia</u> pupae	0.6(1.5)	1.2(2.1)
OTHER INVERTEBRATES		
<u>Turbellaria</u>	0 (0)	0 (0)
<u>Nematoda</u>	0 (0)	1.2(2.1)
<u>Oligochaeta</u>	1.2(1.8)	0.3(1.2)
<u>Hydrocarina</u>	8.4(14.1)	2.7(4.5)

August, 1979

	Bible Camp		Kokanee Bend	
	Kick(x=4)	Circular(x=5)	Kick(x=5)	Circular(x=5)
	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$
EPHEMEROPTERA				
<u>Baetidae</u>				
Baetis tricaudatus	238.5(345.3)	153.0(104.5)	234.9(130.2)	236.4(207.6)
Baetis bicaudatus	0 (0)	0 (0)	0 (0)	0 (0)
Baetis hageni	30.0(40.2)	0 (0)	2.1(4.5)	0 (0)
Pseudocleon sp.	3.9(5.7)	4.8(5.4)	0.9(1.5)	1.2(1.5)
<u>Siphonuridae</u>				
Siphonurus sp.	2.4(4.5)	1.2(2.7)	0 (0)	0 (0)
Ameletus connectus	1.5(3.0)	0 (0)	0 (0)	0 (0)
Ameletus oregonensis	2.4(4.5)	0 (0)	0 (0)	0 (0)
<u>Heptageniidae</u>				
Rhithrogena hageni	271.5(388.5)	189.6(55.8)	121.5(57.9)	73.2(48.9)
Rhithrogena robusta	7.5(15.0)	2.4(3.9)	0 (0)	0.6(1.2)
Epeorus albertae	1.5(1.8)	0 (0)	2.4(2.7)	4.8(3.3)
Cinygmula sp.	0 (0)	0 (0)	2.1(4.5)	1.2(2.7)
Small Heptageniidae	519.9(691.8)	290.4(305.4)	40.5(43.5)	58.5(57.0)
<u>Ephemerellidae</u>				
Ephemerella doddsi	36.9(43.2)	49.2(19.8)	31.5(43.8)	22.2(21.3)
Ephemerella inermis	2.4(4.5)	1.2(2.7)	0 (0)	1.2(1.5)
Ephemerella tibialis	11.4(9.0)	7.2(8.1)	40.5(37.5)	34.8(22.2)
Ephemerella hystrix	0.9(1.5)	0.6(1.5)	0 (0)	0 (0)
Ephemerella flavilinea	0 (0)	0 (0)	1.5(3.0)	3.0(3.0)
<u>Leptophlebiidae</u>				
Paraleptophlebia				
bicornuta	5.1(10.5)	0 (0)	0 (0)	0 (0)
Paraleptophlebia				
heteronea	0 (0)	2.4(5.4)	0 (0)	0.6(1.2)

August, 1979 Cont.

	Bible Camp		Kokanee Bend	
	Kick (x=4)	Circular (x=5)	Kick (x=5)	Circular (x=5)
	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)
PLECOPTERA				
Pteronarcidae				
Pteronarcys californica	0 (0)	0 (0)	0 (0)	0.6 (1.2)
Pteronarcella badia	13.5 (18.3)	7.8 (6.6)	67.5 (43.2)	21.6 (14.7)
Perlidae				
Classenia sabulosa	14.1 (22.5)	10.8 (6.6)	8.1 (10.8)	1.8 (2.7)
Hesperaperla pacifica	5.1 (6.3)	2.4 (3.9)	1.5 (1.8)	3.6 (3.9)
Doroneuria theodora	0 (0)	0 (0)	0 (0)	0 (0)
Small Perlidae	0.9 (1.5)	13.8 (15.3)	2.1 (2.7)	3.6 (2.4)
Perlodidae				
Skwala parallela	0 (0)	0 (0)	3.9 (5.7)	3.6 (4.8)
Isogenoides colubrinus	7.5 (15.0)	0.6 (1.5)	4.5 (7.2)	0 (0)
Small Perlodidae	20.1 (21.0)	4.8 (7.8)	13.5 (9.9)	122.4 (162.6)
Chloroperlidae				
Suwallia sp.	26.4 (36.6)	3.6 (4.8)	29.1 (12.6)	7.2 (33.0)
Sweltsa coloradensis	3.9 (5.7)	0.6 (1.5)	0.9 (1.5)	1.8 (1.5)
Small Chloroperlidae	1.5 (3.0)	7.8 (9.9)	8.1 (10.8)	17.4 (29.1)
Nemouridae				
Zapada cinctipes	1.5 (3.0)	0.6 (1.5)	0 (0)	0 (0)
Zapada columbiana	0 (0)	0 (0)	0 (0)	0 (0)
Capniidae				
Small Capniidae	51.9 (55.5)	4.8 (7.5)	4.5 (5.1)	21.0 (3.9)
TRICHOPTERA				
Hydropsychidae				
Arctopsyche grandis	34.5 (37.2)	11.4 (7.2)	17.1 (7.8)	33.0 (25.5)
Symphitopsyche oslari	47.4 (43.2)	26.4 (17.4)	4.5 (3.9)	8.4 (5.7)
Symphitopsyche cockerelli	142.5 (115.2)	59.4 (26.4)	11.1 (22.5)	20.4 (32.4)

September, 1979

	Bible Camp		Kokanee Bend	
	Kick(x=5)	Circular(x=5)	Kick(x=4)	Circular(x=4)
	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$
EPHEMEROPTERA				
Baetidae				
Baetis tricaudatus	172.8(88.8)	71.4(35.7)	169.8(95.4)	117.9(87.9)
Baetis bicaudatus	0 (0)	0 (0)	0 (0)	0 (0)
Baetis hageni	9.6(13.2)	28.2(58.2)	0 (0)	0 (0)
Pseudocleon sp.	24.0(29.4)	6.0(8.7)	5.4(10.5)	6.0(12.0)
Heptageniidae				
Rhithrogena hageni	1152.6(645.6)	262.2(113.4)	262.2(101.1)	243.0(133.8)
Rhithrogena robusta	4.8(10.8)	0 (0)	4.8(10.8)	0 (0)
Epeorus albertae	0 (0)	0 (0)	3.0(3.6)	7.5(11.4)
Epeorus sp.	0 (0)	0 (0)	0 (0)	0 (0)
Small Heptageniidae	216.0(161.1)	108.6(96.3)	93.6(149.7)	91.5(71.1)
Ephemereleididae				
Ephemerella doddsi	211.2(171.6)	25.8(15.9)	41.4(21.0)	54.9(44.7)
Ephemerella inermis	33.6(27.3)	8.4(10.2)	20.4(24.6)	18.0(36.0)
Ephemerella tibialis	0 (0)	0 (0)	9.0(3.6)	13.5(23.1)
Ephemerella spinifera	0 (0)	0 (0)	4.8(10.8)	0 (0)
Leptophlebiidae				
Paraleptophlebia heteronea	19.2(20.1)	3.0(3.0)	0 (0)	6.0(12.0)
PLECOPTERA				
Pteronarcidae				
Pteronarcys californica	1.2(1.5)	0 (0)	0.6(1.5)	0 (0)
Pteronarcella badia	67.2(46.2)	42.0(60.3)	180.0(117.3)	130.0(182.1)
Perlidae				
Classenia sabulosa	37.8(36.3)	7.8(6.3)	6.6(5.4)	12.9(12.9)
Hesperaperla pacifica	12.6(12.6)	1.2(2.7)	14.4(12.0)	1.5(3.0)
Small Perlidae	14.4(13.2)	0.6(1.5)	6.0(13.5)	6.9(11.7)

September, 1979 Cont.

	Bible Camp		Kokanee Bend	
	Kick(x=5)	Circular(x=5)	Kick(x=4)	Circular(x=4)
	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$
<u>Perlodidae</u>				
Skwala parallela	0 (0)	0.6(1.5)	6.6(9.6)	0 (0)
Isogenoides colubrinus	4.8(10.8)	0 (0)	15.6(12.3)	7.5(11.4)
Isoperla fulva	6.0(10.5)	1.8(3.9)	0 (0)	0 (0)
Small Perlodidae and Taeniopterygidae	100.8(186.3)	47.4(47.7)	645.6(876.3)	691.5(1159.2)
<u>Chloroperlidae</u>				
Suwallia sp.	0 (0)	0 (0)	7.2(8.4)	0 (0)
Sweltsa coloradensis	9.6(13.2)	1.8(1.5)	25.8(30.9)	1.5(3.0)
Small Chloroperlidae	0 (0)	1.8(3.9)	69.6(81.0)	77.1(70.5)
<u>Nemouridae</u>				
Zapada cinctipes	14.4(21.6)	1.2(2.7)	0.6(1.5)	0.9(1.5)
Zapada columbiana	0 (0)	0 (0)	0 (0)	0 (0)
<u>Capniidae</u>				
Small Capniidae	9.6(21.6)	2.4(5.4)	63.6(107.4)	23.1(46.5)
<u>TRICHOPTERA</u>				
<u>Hydropsychidae</u>				
Arctopsyche grandis	34.8(48.0)	10.2(11.7)	198.0(10.2)	145.5(84.9)
Symphitopsyche oslari	201.0(162.3)	46.2(27.0)	5.4(5.7)	6.0(12.0)
Symphitopsyche cockerelli	293.4(177.9)	93.6(84.9)	24.0(13.8)	20.4(27.9)
Small Hydropsychidae	374.4(348.0)	114.6(144.0)	47.4(29.4)	21.0(42.0)
Hydropsychid pupae	0 (0)	0 (0)	0 (0)	0.9(1.5)
<u>Rhyacophilidae</u>				
Rhyacophila angelita	0 (0)	0 (0)	1.8(1.5)	0 (0)
Rhyacophila coloradensis	9.6(13.2)	0 (0)	0 (0)	0 (0)
Rhyacophila vepulsa	0 (0)	0 (0)	0 (0)	0 (0)

September, 1979 Cont.

	Bible Camp		Kokanee Bend	
	Kick(x=5)	Circular(x=5)	Kick(x=4)	Circular(x=4)
	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)
Glossosomatidae				
Glossosoma sp.	14.4(21.6)	1.8(1.5)	286.2(276.0)	117.0(103.8)
Brachycentridae				
Brachycentrus americanus	0.6(1.5)	0 (0)	10.2(3.3)	5.4(10.5)
DIPTERA				
Tipulidae				
Hexatoma sp.	25.8(23.4)	1.2(1.5)	5.4(10.5)	0 (0)
Tanyderidae				
Protanyderus sp.	0 (0)	0 (0)	0.6(1.5)	0 (0)
Blephariceridae				
Blepharicerus sp.	0 (0)	0 (0)	0.6(1.5)	0 (0)
Simuliidae				
Simulium sp.	4.8(10.8)	6.6(14.7)	452.4(311.1)	270.0(330.0)
Simulium arcticum pupae	0 (0)	0 (0)	123.6(90.0)	21.9(43.5)
Chironomidae				
larvae	225.6(134.4)	11.4(20.7)	177.6(222.9)	119.1(238.5)
pupae	0.6(1.5)	67.2(65.4)	111.0(162.0)	12.9(23.7)
adults	0 (0)	0 (0)	0 (0)	0 (0)
Athericidae				
Atherix variegata	4.8(10.8)	1.8(3.9)	3.0(3.0)	12.0(13.8)
OTHER INVERTEBRATES				
Turbellaria				
Nematoda	4.8(10.8)	1.8(1.5)	0 (0)	0 (0)
Oligochaeta	0 (0)	0 (0)	0 (0)	0 (0)
Lumbriculidae	0 (0)	0 (0)	0 (0)	0 (0)
Naididae	4.8(10.8)	1.8(1.5)	1.8(3.9)	0 (0)
Hydrocarina	0 (0)	0 (0)	0 (0)	0 (0)
	0.6(1.5)	0 (0)	0.6(1.5)	6.0(12.0)

October, 1979

	Bible Camp		Kokanee Bend	
	Kick(x=5)	Circular(x=4)	Kick(x=5)	Circular(x=5)
	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)
EPHEMEROPTERA				
<u>Siphonuridae</u>				
Ameletus cooki	0.6(1.5)	0.9(1.5)	0 (0)	0 (0)
<u>Baetidae</u>				
Baetis tricaudatus	1575.6(674.4)	968.1(294.0)	748.2(602.4)	793.2(490.5)
Baetis hageni	427.2(168.6)	416.4(303.6)	51.0(81.0)	70.2(81.0)
Pseudocleon sp.	0 (0)	0 (0)	0 (0)	4.8(10.8)
<u>Heptageniidae</u>				
Rhithrogena hageni	1758.6(732.3)	542.4(323.4)	563.4(282.3)	145.8(92.4)
Rhithrogena robusta	3.0(4.2)	0 (0)	0.6(1.5)	0 (0)
Epeorus albertae	214.8(222.6)	105.0(122.7)	3.6(6.6)	6.0(7.2)
Epeorus deceptivus	0 (0)	0 (0)	0 (0)	0 (0)
Cinygmula sp.	36.0(61.2)	30.0(36.9)	89.4(189.9)	48.0(66.6)
Small Heptageniidae	2278.2(918.0)	851.4(601.2)	1445.4(1117.5)	1794.6(840.0)
<u>Ephemerellidae</u>				
Ephemerella doddsi	121.2(75.9)	21.0(18.0)	125.4(84.6)	51.6(36.0)
Ephemerella inermis	627.0(222.6)	237.0(162.0)	383.4(247.5)	464.4(504.0)
Ephemerella spinifera	0 (0)	0 (0)	7.8(7.2)	3.6(6.6)
<u>Leptophlebiidae</u>				
Paraleptophlebia heteronea	114.6(91.2)	24.9(18.3)	1.8(2.7)	1.8(2.7)
PLECOPTERA				
<u>Pteronarcidae</u>				
Pteronarcys californica	1.8(2.7)	0.9(1.5)	3.0(5.1)	0.6(1.5)
Pteronarcella badia	9.6(6.9)	16.5(27.0)	218.4(132.3)	81.0(75.6)
<u>Perlidae</u>				
Classenia sabulosa	49.8(40.2)	10.5(5.1)	10.2(8.7)	5.4(9.0)
Hesperaperla pacifica	18.0(19.2)	2.4(3.0)	9.6(13.2)	12.0(17.4)
Calineuria californica	0 (0)	0 (0)	0 (0)	0 (0)
Small Perlidae	15.6(20.4)	0 (0)	12.0(12.0)	34.2(42.3)

October, 1979 Cont.

	Bible Camp		Kokanee Bend	
	Kick(x=5) $\bar{x}(s.d.)$	Circular(x=4) $\bar{x}(s.d.)$	Kick(x=5) $\bar{x}(s.d.)$	Circular(x=5) $\bar{x}(s.d.)$
Perlodidae				
Isoperla fulva	130.8(127.8)	24.9(20.7)	19.8(19.5)	40.8(32.1)
Isogenoides colubrinus	0 (0)	0 (0)	11.4(8.7)	6.6(7.5)
Cultus aestivalis	0 (0)	0 (0)	1.2(1.8)	0.6(1.5)
Megarcys watertoni	0 (0)	0 (0)	0 (0)	0 (0)
Small Perlodidae	0 (0)	0 (0)	5.4(7.5)	7.2(12.9)
Chloroperlidae				
Suwalliapallidula adult	0.6(1.5)	0 (0)	0 (0)	0 (0)
Suwallia sp.	0 (0)	0 (0)	1.2(1.8)	0 (0)
Swelltsa coloradensis	3.6(3.9)	3.0(0)	21.6(21.9)	14.4(13.5)
Small Chloroperlidae	47.4(83.4)	22.5(27.0)	279.6(191.4)	209.4(105.3)
Nemouridae				
Zapada cinctipes	2.4(3.3)	0 (0)	12.6(9.0)	13.8(13.5)
Zapada columbiana	0 (0)	0 (0)	0 (0)	0 (0)
Amphinemura sp.	0.6(1.5)	0 (0)	0 (0)	0 (0)
Capniidae				
Small Capniidae	178.2(123.9)	134.4(43.5)	828.6(738.9)	1168.8(827.1)
Taeniopterygidae				
Small Taeniopterygidae	3640.2(1218.0)	1153.5(920.1)	3370.2(1490.1)	3177.0(1999.8)
TRICHOPTERA				
Hydropsychidae				
Arctopsyche grandis	27.0(29.7)	3.9(4.5)	286.2(234.9)	301.2(198.6)
Symphitopsyche oslari	655.8(378.9)	140.4(61.8)	30.6(33.0)	9.0(11.1)
Symphitopsyche cockerelli	129.6(109.5)	31.5(14.4)	46.8(42.3)	10.2(10.5)
Hydropsyche placoda	49.8(43.2)	14.1(28.5)	0.6(1.5)	0 (0)
Small Hydropsychidae	681.0(410.4)	51.9(45.6)	246.6(227.1)	103.8(125.4)
Hydropsychid pupae	0 (0)	0 (0)	0.6(1.5)	0 (0)

October, 1979 Cont.

	Bible Camp		Kokanee Bend	
	Kick(x=5)	Circular(x=4)	Kick(x=5)	Circular(x=5)
	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$
<u>Rhyacophilidae</u>				
Rhyacophila coloradensis	4.8(10.8)	0 (0)	5.4(6.3)	0 (0)
Small Rhyacophila sp.	4.8(10.8)	0 (0)	0 (0)	5.4(10.5)
Rhyacophila pupae	0 (0)	0 (0)	0.6(1.5)	0 (0)
<u>Glossosomatidae</u>				
Glossosoma sp.	6.0(10.5)	38.4(74.4)	1159.2(495.3)	458.4(333.6)
<u>Hydroplilidae</u>				
Ochrotrichia sp.	4.8(10.8)	0 (0)	0 (0)	0 (0)
<u>Brachycentridae</u>				
Brachycentrus americanus	1.8(2.7)	0 (0)	6.0(6.9)	25.2(33.6)
<u>COLEOPTERA</u>				
<u>Elmidae</u>				
Zaitzevia parvula	4.8(10.8)	0 (0)	0 (0)	2.4(3.3)
Optioservus quadrimaculatus	0 (0)	0 (0)	0.6(1.5)	3.6(6.6)
<u>DIPTERA</u>				
<u>Tipulidae</u>				
Hexatoma sp.	30.0(42.3)	13.5(12.3)	12.0(18.0)	3.6(5.4)
Antocha sp.	0 (0)	0 (0)	2.4(5.4)	2.4(5.4)
<u>Tanyderidae</u>				
Protanyderus sp.	0.6(1.5)	0 (0)	1.8(3.9)	0.6(1.5)
<u>Simuliidae</u>				
Simulium sp.	1.2(2.7)	0 (0)	24.6(36.3)	6.0(11.7)
Simulium arcticum pupae	0 (0)	0 (0)	28.8(64.5)	0 (0)

October, 1979 Cont.

	Bible Camp		Kokanee Bend	
	Kick(x=5)	Circular(x=4)	Kick(x=5)	Circular(x=5)
	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)
<u>Chironomidae</u>				
larvae	278.4(321.0)	230.4(187.8)	0 (0)	642.0(212.1)
pupae	15.0(21.3)	3.0(6.0)	0 (0)	2.4(3.9)
adults	3.0(6.6)	0 (0)	0 (0)	0 (0)
<u>Athericidae</u>				
Atherix variegata	19.2(24.6)	8.4(5.7)	25.2(15.6)	13.8(13.8)
<u>Empididae</u>				
Chelifera sp.	0 (0)	0 (0)	2.4(5.4)	0 (0)
<u>OTHER INVERTEBRATES</u>				
<u>Turbellaria</u>				
	13.8(30.9)	6.9(13.5)	0 (0)	2.4(5.4)
<u>Nematoda</u>				
	6.0(10.2)	2.4(4.5)	13.8(18.6)	33.0(49.5)
<u>Oligochaeta</u>				
<u>Lumbriculidae</u>				
	21.0(47.1)	6.9(13.5)	26.4(18.3)	10.8(20.7)
<u>Naididae</u>				
	4.8(10.8)	0 (0)	1025.4(1971.9)	230.4(228.9)
<u>Hydrocarina</u>				
	26.4(30.0)	179.4(319.2)	0 (0)	211.2(224.4)

November, 1979

	Bible Camp		Kokanee Bend	
	Kick (x=5) $\bar{x}$ (s.d.)	Circular (x=5) $\bar{x}$ (s.d.)	Kick (x=5) $\bar{x}$ (s.d.)	Circular (x=5) $\bar{x}$ (s.d.)
EPHEMEROPTERA				
Siphonuridae				
Ameletus sparsatus	0.6 (1.2)	0 (0)	0.6 (1.2)	2.4 (5.4)
Ameletus cooki	0.6 (1.2)	0 (0)	0 (0)	0 (0)
Small Ameletus sp.	9.6 (21.6)	19.2 (31.2)	0 (0)	0 (0)
Baetidae				
Baetis tricaudatus	1535.4 (727.8)	988.2 (768.6)	1053.6 (1120.5)	400.2 (325.5)
Baetis hageni	1124.4 (513.0)	453.0 (380.1)	91.2 (167.7)	15.0 (22.5)
Heptageniidae				
Rhithrogena hageni	3082.8 (1060.2)	651.6 (575.1)	335.4 (223.8)	157.8 (135.0)
Rhithrogena robusta	0 (0)	0 (0)	0.6 (1.2)	0 (0)
Epeorus albertae	218.4 (133.8)	172.8 (181.5)	12.0 (25.2)	5.4 (12.0)
Epeorus grandis	0 (0)	0 (0)	0 (0)	0 (0)
Cinygmula sp.	186.6 (155.7)	51.0 (41.1)	970.8 (1227.3)	88.8 (124.5)
Small Heptageniidae	3379.2 (917.4)	1974.6 (1783.8)	1221.6 (3034.8)	496.8 (324.0)
Ephemerellidae				
Ephemerella doddsi	73.2 (21.9)	19.8 (18.9)	34.2 (9.6)	46.8 (34.5)
Ephemerella inermis	471.0 (37.5)	184.8 (162.6)	339.6 (509.4)	86.4 (107.4)
Ephemerella spinifera	0 (0)	0 (0)	4.8 (10.8)	1.2 (1.5)
Leptophlebiidae				
Paraleptophlebia heteronea	99.0 (80.7)	33.6 (34.8)	10.8 (14.4)	14.4 (21.6)
PLECOPTERA				
Pteronarcidae				
Pteronarcys californica	1.2 (1.5)	0 (0)	8.4 (15.6)	1.2 (1.5)
Pteronarcella badia	17.4 (19.5)	1.2 (1.5)	81.6 (31.8)	52.2 (16.5)
Perlidae				
Classenia sabulosa	34.8 (14.4)	7.2 (8.1)	27.0 (21.6)	9.0 (6.6)
Hesperaperla pacifica	19.8 (15.3)	4.2 (4.5)	22.8 (26.4)	3.0 (5.1)
Small Perlidae	0 (0)	0 (0)	14.4 (84.9)	0.6 (1.5)

November, 1979 Cont.

	Bible Camp		Kokanee Bend	
	<u>Kick (x=5)</u>	<u>Circular (x=5)</u>	<u>Kick (x=5)</u>	<u>Circular (x=5)</u>
	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$	$\bar{x}(s.d.)$
<u>Athericidae</u>				
<u>Atherix variegata</u>	13.8(22.8)	1.2(1.5)	34.8(47.4)	4.2(2.7)
OTHER INVERTEBRATES				
<u>Turbellaria</u>	19.8(23.4)	18.0(25.8)	0.6(1.2)	0 (0)
<u>Nematoda</u>	61.2(36.3)	4.8(10.8)	16.2(24.0)	9.0(11.1)
<u>Oligochaeta</u>				
<u>Lumbriculidae</u>	18.6(18.3)	4.2(9.3)	12.0(12.9)	0 (0)
<u>Naididae</u>	0 (0)	4.8(10.8)	8.4(15.6)	7.2(10.8)
<u>Hirudinia</u>				
<u>Piscicola sp.</u>	0 (0)	0 (0)	0.6(1.2)	0 (0)
<u>Hydracarina</u>	84.0(70.5)	39.6(31.5)	124.2(253.2)	16.8(20.1)

DECEMBER
(12-20-79)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=7 ($\bar{x}$, s.d.)		Kick n=4 ($\bar{x}$, s.d.)	Circular n=4 ($\bar{x}$, s.d.)	Kick n=4 ($\bar{x}$, s.d.)	Circular n=4 ($\bar{x}$, s.d.)
EPHEMEROPTERA						
Siphonuridae						
Ameletus cooki	3(5)		----	----	----	----
Ameletus sparsatus	10(14)		----	----	----	----
small Siphonuridae	9(15)		----	----	----	----
Baetidae						
Baetis tricaudatus	389(159)		141(31)	87(101)	163(51)	105(77)
Baetis hageni	152(171)		4(6)	20(39)	----	----
Heptageniidae						
Rhithrogena hageni	1,483(547)		422(210)	260(269)	----	----
Rhithrogena robusta	3(5)		----	----	8(15)	----
Epeorus grandis	----		----	----	0.8(2)	2(3)
Epeorus sp.	123(167)		----	----	----	----
Cinygmula sp.	734(844)		49(43)	108(206)	----	6(12)
small Heptageniidae	----		----	----	43(53)	6(12)
Ephemerellidae						
Ephemerella doddsi	16(9)		11(11)	17(17)	----	0.8(2)
Ephemerella spinifera	----		0.9(2)	----	----	----
Ephemerella inermis	288(145)		26(25)	51(100)	----	0.8(2)
Leptophlebiidae						
Paraleptophlebia heteronea	82(85)		----	2(3)	----	----
PLECOPTERA						
Pteronarcidae						
Pteronarcys californica	0.3(1)		----	2(3)	----	----
Pteronarcella badia	0.9(2)		41(22)	43(35)	----	----
Taeniopterygidae						
Taenionema pacificum	303(224)		97(77)	56(43)	44(23)	26(28)

DECEMBER (Continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=7 ($\bar{x}$, s.d.)	Kick n=4 ($\bar{x}$, s.d.)	Circular n=4 ($\bar{x}$, s.d.)	Kick n=4	Circular n=4 ($\bar{x}$, s.d.)	
<u>Nemouridae</u>						
Zapada cinctipes	3(6)	----	----	15(12)	8(15)	
Zapada columbiana	----	----	----	21(25)	6(5)	
Prostoia besametsa	----	----	7(14)	----	----	
<u>Capniidae</u>						
Utacapnia sp.	42(45)	122(100)	0.9(2)	----	----	
Capnia sp.	163(197)	----	95(93)	----	----	
Capnia sp. A	9(9)	----	----	----	----	
small Capniidae	75(143)	182(192)	----	55(36)	8(11)	
<u>Leuctridae</u>						
small Leuctridae	----	----	----	----	2(8)	
<u>Perlidae</u>						
Classenia sabulosa	11(13)	11(15)	7(10)	----	----	
Hesperaperla pacifica	6(6)	0.9(2)	5(5)	----	----	
Doroneuria theodora	----	----	----	----	----	
small Perlidae	0.3(1)	----	30(60)	0.8(2)	----	
<u>Perlodidae</u>						
Isogenoides colubrinus	----	3(4)	0.9(1.5)	----	----	
Diura knowltoni	----	----	6(12)	12(24)	14(23)	
Setvena bradleyi	----	----	----	0.8(2)	----	
Isoperla fulva	15(9)	23(19)	26(47)	----	----	
Isoperla patricia	----	----	5(9)	----	----	
small perlodidae	----	----	30(60)	----	----	
<u>Chloroperlidae</u>						
Sweltsa coloradensis	4(3)	2(3)	2(3)	0.8(2)	----	
Trisnaka sp.	0.3(1)	20(7)	----	8(15)	2(2)	
Suwallia sp.	----	----	----	8(2)	----	
small Chloroperlidae	12(14)	58(66)	80(60)	----	----	

DECEMBER (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=7 $\bar{x}$ (s.d.)		Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
TRICHOPTERA						
Hydropsychidae						
Arctopsyche grandis	0.9(2)		45(19)	144(268)	---	---
Symphitopsyche osleri	51(59)		6(12)	32(61)	---	---
Symphitopsyche cockerelli	15(11)		0.9(2)	5(9)	---	---
Hydropsyche occidentalis	27(55)		---	3(6)	0.8(2)	---
small Hydropsychidae	112(81)		12(10)	62(95)	---	---
Rhyacophilidae						
Rhyacophila bifila	0.3(1)		---	---	0.8(2)	---
Rhyacophila vao	---		---	0.9(2)	---	---
Rhyacophila vepulsa	---		---	---	0.8(2)	---
Glossosomatidae						
Glossosoma sp.	2(2)		278(186)	80(62)	---	---
Brachycentridae						
Brachycentrus sp.	---		---	8(15)	---	---
Lepidostomatidae						
Lepidostoma sp.	2(5)		---	---	---	---
COLEOPTERA						
Elmidae						
Zaitzevia parvula	---		3(6)	---	---	---
Optioservus quadrimaculatus	---		---	0.9(2)	---	---
DIPTERA						
Tipulidae						
Hexatoma sp.	5(5)					
Antocha sp.	0.3(1)		6(8)	2(2)	---	---
Tanyderidae						
Protanyderus sp.	---		0.9(2)	0.9(2)	---	---

DECEMBER (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=7 ($\bar{x}$, s.d.)	Kick n=4	Kick n=4	Circular n=4 ($\bar{x}$, s.d.)	Kick n=4	Circular n=4 ($\bar{x}$, s.d.)
<u>Simuliidae</u>						
Simulium sp.	6(13)	7(6)		3(6)	----	----
Simulium arcticum pupae	----	0.9(2)		----	----	----
<u>Chironomidae</u>						
Chironomidae larvae	1,308(1,030)	1,087(1,004)		935(1,157)	----	----
<u>Athericidae</u>						
Atherix variegata	2(2)	2(3)		5(7)	----	----
<u>Empididae</u>						
Chelifera sp.	0.9(2)	3(6)		----	----	----
OTHER INVERTEBRATES						
Turbellaria	6(12)	10(12)		----	313(284)	0.8(2)
Nematoda	4(9)	11(8)		6(12)	----	7(12)
Oligochaeta	----	----		----	----	----
Lumbriculidae	1(2)	10(12)		7(12)	410(126)	65(39)
Naididae	----	27(46)		773(1,454)	31(37)	24(48)
Hydracarina	18(31)	30(60)		26(37)	86(92)	18(12)
Piscicola	0.3(1)	----		----	----	----

JANUARY
(1-15-80)

	Kokanee Bend Kick n=8 $\bar{x}$ (s.d.)	South Fork Kick n=8 $\bar{x}$ (s.d.)
EPHEMEROPTERA		
<u>Baetidae</u>		
Baetis tricaudatus	202(254)	378(392)
Baetis hageni	6(11)	----
<u>Heptageniidae</u>		
Rhithrogena hageni	377(401)	----
Rhithrogena robusta	0.9(2)	0.3(0.9)
Epeorus sp.	3(8)	----
Cinygmula sp.	135(166)	----
small Heptageniidae	----	13(19)
<u>Ephemerellidae</u>		
Ephemerella doddsi	7(11)	----
Ephemerella inermis	63(97)	----
Ephemerella spinifera	0.3(1)	----
<u>Leptophlebiidae</u>		
Paraleptophlebia heteronea	4(10)	----
PLECOPTERA		
<u>Pteronarcidae</u>		
Pteronarcys californica	10(25)	----
Pteronarcella badia	38(43)	----
<u>Taeniopterygidae</u>		
Taenionema pacificum	110(89)	7(7)
<u>Nemouridae</u>		
Zapada cinctipes	4(5)	5(9)
Zapada columbiana	----	4(4)
Prostoia besametsa	1(1)	----
<u>Capniidae</u>		
Utacapnia sp.	21(16)	----
Capnia sp.	30(37)	----
Capnia sp. A	2(4)	----
small Capniidae	59(121)	30(33)
<u>Perlidae</u>		
Classenia sabulosa	5(5)	----
Hesperaperla pacifica	1(2)	----
small Perlidae	3(4)	----
<u>Perlodidae</u>		
Isogenoides colubrinus	0.9(2)	----
Megarcys watertoni	----	----
Diura knowltoni	2(4)	27(28)
Kogotus modestus	----	0.3(0.9)
Isoperla fulva	35(41)	----
Isoperla patricia	5(13)	----
small Perlodidae	0.9(2)	----

JANUARY (continued)

	Kokanee Bend	South Fork
	Kick	Kick
	n=8	n=8
	$\bar{x}$ (s.d.)	$\bar{x}$ (s.d.)
<u>Chloroperlidae</u>		
Sweltsa coloradensis	4(5)	1(2)
Trisnaka sp.	34(41)	----
small Chloroperlidae	57(78)	----
<u>TRICHOPTERA</u>		
<u>Hydropsychidae</u>		
Arctopsyche grandis	151(219)	----
Symphitopsyche oslari	3(6)	----
Symphitopsyche cockerelli	1(2)	----
Hydropsyche occidentalis	3(6)	----
small Hydropsychidae	23(52)	----
<u>Rhyacophilidae</u>		
Rhyacophila angelita	2(4)	----
Rhyacophila bifila	2(2)	----
Rhyacophila coloradensis	0.3(1)	----
<u>Glossosomatidae</u>		
Glossosoma sp.	242(324)	----
<u>Brachycentridae</u>		
Brachycentrus sp.	3(6)	----
<u>COLEOPTERA</u>		
<u>Elmidae</u>		
Optioservus quadrimaculatus	2(4)	----
<u>DIPTERA</u>		
<u>Blephariceridae</u>		
Blephariceridae	0.3(1)	----
<u>Tipulidae</u>		
Hexatoma sp.	4(5)	----
Antocha sp.	0.3(1)	----
<u>Simuliidae</u>		
Simulium sp.	13(24)	----
<u>Chironomidae</u>		
Chironomidae larvae	895(983)	10,397(9,253)
Chironomidae pupae	0.3(1)	----
Chironomidae adults	4(5)	----
<u>Tanyderidae</u>		
Protanyderus sp.	0.3(1)	----
<u>Athericidae</u>		
Atherix variegata	7(10)	----
<u>OTHER INVERTEBRATES</u>		
Turbellaria	3(8)	330(206)
Nematoda	2(4)	12(13)
Oligochaeta		
Lumbriculidae	6(10)	446(382)
Naididae	26(50)	59(69)
Hydracarina	14(38)	183(264)

FEBRUARY
(2-11-80)

	Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
COLLEMBOLA	6(12)	----	----	----
EPHEMEROPTERA				
<u>Siphonuridae</u>				
Ameletus sparsatus	----	6(12)	----	----
small Siphonuridae	----	24(20)	----	----
<u>Baetidae</u>				
Baetis tricaudatus	76(63)	248(228)	362(101)	191(32)
Baetis hageni	0.9(2)	----	----	----
<u>Heptageniidae</u>				
Rhithrogena hageni	175(150)	383(378)	----	----
Epeorus sp.	----	----	----	----
Cinygmula sp.	176(291)	479(555)	33(62)	1(2)
<u>Ephemerellidae</u>				
Ephemerella doddsi	2(2)	7(8)	----	----
Ephemerella inermis	23(25)	54(44)	----	----
Ephemerella sp.	----	----	1(2)	----
<u>Leptophlebiidae</u>				
Paraleptophlebia heteronea	----	2(3)	----	----
PLECOPTERA				
<u>Pteronarcidae</u>				
Pteronarcys californica	----	2(3)	----	----
Pteronarcella badia	6(7)	68(84)	----	----
<u>Taeniopterygidae</u>				
Taenionema pacificum	275(183)	96(68)	17(35)	----
<u>Nemouridae</u>				
Zapada cinctipes	8(11)	2(2)	22(26)	2(2)
Zapada columbiana	----	----	10(16)	1(2)
Prostoia besametsa	6(7)	13(16)	----	2(2)
small Nemouridae	6(12)	6(12)	----	----
<u>Capniidae</u>				
Utacapnia sp.	110(81)	19(25)	2(5)	----
Capnia sp.	----	259(243)	56(70)	6(5)
small Capniidae	461(138)	----	6(12)	9(18)
<u>Perlidae</u>				
Classenia sabulosa	0.9(2)	17(31)	----	----
Hesperaperla pacifica	----	14(26)	----	----
Doroneuria theodora	----	----	1(2)	----
<u>Perlodidae</u>				
Skwala parallela	----	0.9(2)	----	----
Diura knowltoni	2(2)	0.9(2)	9(8)	9(11)
Isoperla fulva	3(2)	35(50)	----	----

FEBRUARY (continued)

	Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}(s.d.)$	Circular n=4 $\bar{x}(s.d.)$	Kick n=4 $\bar{x}(s.d.)$	Circular n=4 $\bar{x}(s.d.)$
<u>Chloroperlidae</u>				
Sweltsa coloradensis	2(3)	7(10)	----	----
Trisnaka sp.	0.9(2)	53(65)	----	----
small Chloroperlidae	41(44)	110(56)	----	7(12)
<u>TRICHOPTERA</u>				
<u>Hydropsychidae</u>				
Arctopsyche grandis	4(3)	147(212)	----	----
Symphitopsyche oslari	----	4(8)	----	----
Symphitopsyche cockerelli	----	2(5)	----	----
Hydropsyche occidentalis	----	2(2)	----	----
small Hydropsychidae	----	12(24)	----	----
<u>Rhyacophilidae</u>				
Rhyacophila coloradensis	----	----	1(2)	----
Rhyacophila verrula	----	----	9(16)	1(2)
small Rhyacophila sp.	----	----	2(3)	13(15)
<u>Glossosomatidae</u>				
Glossosoma sp.	70(63)	236(188)	----	----
<u>Hydroptilidae</u>				
Ochrotrichia sp.	0.9(2)	----	----	----
<u>Brachycentridae</u>				
Brachycentrus sp.	----	0.9(2)	----	----
<u>DIPTERA</u>				
<u>Simuliidae</u>				
Simulium sp.	29(21)	24(48)	68(137)	1(2)
<u>Chironomidae</u>				
Chironomidae larvae	1,220(764)	1,417(1,273)	10,081(8,250)	7,541(2,671)
Chironomidae pupae	----	----	2(5)	----
Chironomidae adults	0.9(2)	----	----	----
<u>Athericidae</u>				
Atherix varietaga	2(3)	2(2)	----	----
<u>Epididae</u>				
Hemerodromia sp.	----	6(12)	----	----
<u>OTHER INVERTEBRATES</u>				
Turbellaria	----	5(7)	402(30)	72(17)
Nematoda	19(38)	----	6(12)	----
Oligochaeta				
Lumbriculidae	3(4)	3(4)	258(121)	131(131)
Naididae	15(14)	38(57)	102(204)	36(31)
Hydracarina	----	36(31)	354(342)	36(72)
Hirudinea				
Piscicola	----	2(3)	----	----

MARCH (3-14-80)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
EPHEMEROPTERA						
Siphonuridae						
Ameletus cooki	31(59)	9(11)	44(87)	----	----	----
Ameletus sparsatus	23(25)	236(413)	----	----	----	----
small Siphonuridae	65(131)	31(62)	----	95(43)	----	----
Baetidae						
Baetis tricaudatus	179(200)	265(325)	161(74)	171(69)	543(322)	378(291)
Baetis hageni	409(341)	181(210)	----	----	----	----
Heptageniidae						
Rhithrogena hageni	2,783(1,256)	1,646(912)	224(154)	178(65)	----	----
Rhithrogena robusta	----	----	----	----	0.9(2)	0.9(2)
Epeorus sp.	92(96)	119(81)	0.9(2)	----	----	----
Epeorus grandis	----	----	----	----	2(5)	----
Cinygmula sp.	377(199)	761(295)	80(111)	167(186)	38(56)	42(41)
Ephemerellidae						
Ephemerella doddsi	22(13)	11(8)	9(8)	3(2)	----	----
Ephemerella inermis	189(26)	185(49)	18(10)	16(23)	----	----
Ephemerella flavilinea	----	----	----	4(8)	----	----
Ephemerella heterocaudata	----	----	----	----	6(12)	----
Ephemerella sp.	----	----	----	----	25(48)	6(12)
Leptophlebiidae						
Paraleptophlebia heteronea	59(43)	51(12)	----	----	----	----
PLECOPTERA						
Pteronarcidae						
Pteronarcella badia	2(3)	3(6)	50(55)	18(25)	----	----
Taeniopterygidae						
Taenionema pacificum	197(367)	123(160)	251(117)	229(45)	8(13)	2(3)

MARCH (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
Nemouridae						
Zapada cinctipes	0.9(2)	2(3)	----	----	74(125)	3(2)
Zapada columbiana	----	----	----	----	12(20)	23(34)
Prostoia besametsa	0.9(2)	0.9(2)	8(5)	8(5)	2(3)	----
Capniidae						
Utacapnia sp.	5(7)	2(5)	4(6)	----	----	----
Capnia confusa		0.9(2)	0.9(2)	2(2)	0.9(2)	----
Capnia sp.	423(719)	188(284)	301(331)	470(310)	27(21)	6(6)
Capnia sp. A	7(4)	5(3)	2(3)	2(3)	----	----
Perlidae						
Classenia sabulosa	14(9)	20(16)	2(2)	10(7)	----	----
Hesperoperla pacifica	3(2)	5(5)	3(6)	2(3)	----	----
small Perlidae	----	----	----	3(6)	----	----
Perlodidae						
Isogenoides colubrinus	----	----	----	0.9(2)	----	----
Diura knowltoni	----	----	----	----	34(31)	17(21)
Isoperla fulva	14(17)	8(8)	10(11)	9(14)	----	----
Isoperla patricia	----	0.9(2)	0.9(2)	0.9(2)	----	----
small Perlodidae	0.9(2)	----	----	----	----	----
Chloroperlidae						
Sweltsa coloradensis	5(6)	----	5(7)	4(6)	----	----
Triznaka sp.	8(13)	8(5)	22(11)	67(92)	----	----
small Chloroperlidae	12(17)	3(4)	58(23)	140(111)	7(14)	----
TRICHOPTERA						
Hydropsychidae						
Arctopsyche grandis	----	6(5)	65(72)	58(76)	----	----
Parapsyche elsis	----	----	----	----	0.9(2)	----
Symphitopsyche oslari	17(11)	78(69)	----	0.9(2)	----	----
Symphitopsyche cockerelli	9(6)	11(10)	0.9(2)	----	----	----
Hydropsyche occidentalis	9(12)	38(62)	----	2(3)	----	----
small Hydropsychidae	31(35)	60(50)	23(25)	3(6)	----	----

MARCH (continued)

	Bible Creek		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
<u>Rhyacophilidae</u>						
<u>Rhyacophila angelita</u>	2(3)	----	----	----	----	----
<u>Rhyacophila vaccua</u>	----	----	0.9(2)	----	----	----
<u>Rhyacophila verrula</u>	----	----	----	----	13(23)	11(13)
<u>Rhyacophila vepulsa</u>	----	----	----	----	----	0.9(2)
<u>Glossosomatidae</u>						
<u>Glossosoma sp.</u>	3(6)	----	95(29)	105(23)	----	6(12)
<u>Hydroptilidae</u>						
<u>Ochrotrichia sp.</u>	----	0.9(2)	----	----	----	----
<u>Brachycentridae</u>						
<u>Brachycentrus sp.</u>	----	----	0.9(2)	----	----	----
<u>DIPTERA</u>						
<u>Tipulidae</u>						
<u>Hexatoma sp.</u>	7(5)	2(2)	2(3)	0.9(2)	----	----
<u>Antocha sp.</u>	----	----	----	2(3)	----	----
<u>Simuliidae</u>						
<u>Simulium sp.</u>	10(20)	18(36)	29(45)	58(16)	----	102(188)
<u>Chironomidae</u>						
<u>Chironomidae larvae</u>	1,277(836)	1,881(1,407)	1,214(466)	1,385(544)	14,092(4,695)	10,009(6,259)
<u>Chironomidae pupae</u>	0.9(2)	6(12)	4(8)	2(2)	159(69)	66(50)
<u>Chironomidae adults</u>	----	0.9(2)	----	----	0.9(2)	----
<u>Tanyderidae</u>						
<u>Protanyderus sp.</u>	----	----	0.9(2)	----	----	----
<u>Athericidae</u>						
<u>Atherix variegata</u>	0.9(2)	2(3)	7(10)	2(3)	----	----
<u>Empididae</u>						
<u>Chelifera sp.</u>	----	----	----	----	----	----

MARCH (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
OTHER INVERTEBRATES						
Turbellaria	8(6)	8(5)	6(8)	2(3)	314(101)	292(130)
Nematoda	7(14)	0.9(2)	3(6)	17(23)	30(45)	36(31)
Oligochaeta						
Lumbriculidae	17(27)	4(8)	19(20)	17(12)	259(58)	366(211)
Naididae			22(28)	48(56)	96(104)	66(77)
Hydracarina	28(56)	24(34)	-----	6(12)	870(1,073)	319(280)

APRIL (4-15-80)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
EPHEMEROPTERA						
Siphonuridae						
Ameletus cooki	----	0.9(2)	----	----	----	----
Ameletus sparsatus	26(35)	3(2)	----	----	----	----
small Siphonuridae	184(164)	244(166)	266(146)	146(79)	12(14)	6(12)
Baetidae						
Baetis tricaudatus	544(790)	471(464)	1,488(673)	610(312)	422(181)	98(63)
Baetis hageni	229(198)	130(112)	13(23)	2(3)	----	----
Baetis bicaudatus	----	----	----	----	357(93)	85(52)
Heptageniidae						
Rhithrogena hageni	1,947(1,646)	551(690)	173(136)	87(66)	----	----
Rhithrogena robusta	10(11)	6(4)	6(5)	----	5(5)	2(2)
Epeorus sp.	101(79)	54(42)	8(6)	8(8)	----	----
Epeorus grandis	----	----	----	----	11(13)	0.9(2)
Cinygmula sp.	651(433)	519(437)	164(37)	63(26)	116(43)	26(20)
Ephemerellidae						
Ephemerella doddsi	8(9)	6(2)	2(5)	0.9(2)	----	----
Ephemerella inermis	359(150)	107(67)	55(47)	12(11)	----	----
Ephemerella tibialis	----	----	----	----	85(59)	----
Ephemerella flavilinea	----	----	----	----	0.9(2)	----
Ephemerella heterocaudata	----	----	----	----	0.9(2)	----
small Ephemerella sp.	----	----	90(74)	----	42(84)	13(13)
Leptophlebiidae						
Paraleptophlebia heteronea	60(32)	38(30)	----	----	----	----
PLECOPTERA						
Pteronarcidae						
Pteronarcys californica	----	0.9(2)	2(3)	----	----	----
Pteronarcella badia	3(5)	0.9(2)	19(24)	25(30)	----	----
Taeniopterygidae						
Taenionema pacificum	38(66)	70(62)	5(2)	5(4)	----	0.9(2)

APRIL (4-15-80)
(continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
Nemouridae						
Zapada cinctipes	---	---	---	4(6)	0.9(2) 47(56)	13(26) 15(14)
Zapada columbiana	---	---	---	---	---	6(12)
Suwallia pallidula	---	---	---	---	---	---
Prostoia besametsa	---	---	16(10)	5(6) 2(3)	8(11) 6(12)	---
small Nemouridae	---	---	---	---	---	6(12)
Capniidae						
Utacapnia sp.	9(16) 105(182)	---	---	---	---	---
Capnia confusa	---	8(5)	34(31)	6(4)	---	---
Capnia sp.	---	52(52)	100(99)	27(19)	3(4)	0.9(2)
Capnia sp. A	---	5(5)	---	---	---	---
Isocapnia sp.	---	---	---	---	---	6(12)
Perlidae						
Calineuria californica	---	---	---	---	---	0.9(2)
Classenia sabulosa	---	5(7)	3(4)	2(2)	---	---
Hesperaperla pacifica	---	3(0)	0.9(2)	---	---	---
small Perlidae	---	---	9(18)	6(12)	---	---
Perlodidae						
Diura knowltoni	0.9(2) 6(11)	---	---	---	13(12)	5(2)
Isoperla fulva	---	2(3)	2(2)	4(6)	---	---
Isoperla patricia	---	---	---	2(2)	---	---
small Perlodidae	---	---	---	3(6)	---	---
Chloroperlidae						
Sweltsa coloradensis	---	2(2)	0.9(2)	---	0.9(2)	---
Trisnaka sp.	---	3(2)	5(4)	3(4)	---	---
small Chloroperlidae	---	15(23)	84(61)	23(14)	6(12)	---
TRICHOPTERA						
Hydropsychidae						
Arctopsyche grandis	0.9(2) 18(13)	---	146(285)	26(41)	---	---
Symphitopsyche oslari	---	2(3)	---	---	---	---
Symphitopsyche cockerelli	2(4)	0.9(2)	---	---	---	---

APRIL (4-15-80)
(continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
<u>Hydropsychidae (cont.)</u>						
<u>Hydropsyche occidentalis</u>	----	5(5)	----	----	----	----
<u>small Hydropsychidae</u>	64(5)	32(38)	----	3(6)	----	----
<u>Rhyacophilidae</u>						
<u>Rhyacophila coloradensis</u>	----	----	----	----	0.9(2)	----
<u>Rhyacophila bifida</u>	----	----	----	----	2(3)	----
<u>Rhyacophila verrula</u>	----	----	----	----	32(42)	14(11)
<u>Glossosomatidae</u>						
<u>Glossosoma sp.</u>	5(2)	----	113(69)	60(43)	----	----
<u>Hydroptilidae</u>						
<u>Ochrotrichia sp.</u>	----	----	18(23)	7(8)	----	----
<u>Brachycentridae</u>						
<u>Brachycentrus sp.</u>	2(4)	2(2)	----	0.9(2)	----	----
<u>COLEOPTERA</u>						
<u>Elmidae</u>						
<u>Optioservus quadrimaculatus</u>	----	2(2)	----	2(3)	----	----
<u>DIPTERA</u>						
<u>Tipulidae</u>						
<u>Hexatoma sp.</u>	21(31)	7(14)	2(2)	2(3)	----	----
<u>Simuliidae</u>						
<u>Simulium sp.</u>	83(56)	99(50)	947(626)	564(522)	1,909(687)	66(82)
<u>Chironomidae</u>						
<u>Chironomidae larvae</u>	1,357(852)	1,350(664)	2,472(609)	875(240)	12,016(3,928)	6,755(2,213)
<u>Chironomidae pupae</u>	8(13.9)	20(23)	135(68)	20(13)	1,503(500)	405(217)
<u>Chironomidae adults</u>	42(39)	4(5)	11(12)	3(0)	322(96)	80(94)
<u>Tanyderidae</u>						
<u>Protanyderus sp.</u>	----	----	0.9(2)	----	----	----

APRIL (4-15-80)
(continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
Athericidae						
Atherix variegata	2(4)	----	0.9(2)	0.9(2)	----	----
Empididae						
Chelifera sp.	-----	----	0.9(2)	-----	----	----
OTHER INVERTEBRATES						
Turbellaria	2(2)	-----				
Nematoda	-----	18(36)	-----	0.9(2) 0.9(2)	648(149) 6(12)	311(92) 6(12)
Oligochaeta						
Lumbriculidae	2(4)	2(3)	55(110)	11(12)	443(205)	238(96)
Naididae	0.9(2)	-----	94(76)	30(26)	97(81)	108(57)
Hydracarina	9(13)	6(12)	156(249)	39(29)	326(217)	120(76)

MAY (5-12-80)

	South Fork
	Kick
	n=4
	$\bar{x}(s.d.)$
EPHEMEROPTERA	
<u>Siphonuridae</u>	
small Siphonuridae	12(14)
<u>Baetidae</u>	
Baetis tricaudatus	288(98)
Baetis bicaudatus	326(174)
<u>Heptageniidae</u>	
Cinygmula sp.	114(133)
Rhithrogena robusta	0.9(2)
Epeorus grandis	0.9(2)
<u>Ephemerellidae</u>	
Ephemerella doddsi	38(47)
Ephemerella flavilinea	0.9(2)
Ephemerella heterocaudata	0.9(2)
Ephemerella tibialis	6(12)
PLECOPTERA	
<u>Perlodidae</u>	
Diura knowltoni	41(43)
<u>Chloroperlidae</u>	
Sweltsa coloradensis	5(4)
Pteronarcella badia	13(13)
small Chloroperlidae	6(12)
<u>Nemouridae</u>	
Zapada columbiana	59(41)
<u>Capniidae</u>	
Capnia sp.	6(12)
Isocapnia sp.	0.9(2)
TRICHOPTERA	
<u>Rhyacophilidae</u>	
Rhyacophila bifila	0.9(2)
Rhyacophila verrula	6(4)
Rhyacophila vagrita	0.9(2)
small Rhyacophila	6(12)
DIPTERA	
<u>Chironomidae</u>	
Chironomidae larvae	8,611(3,341)
Chironomidae pupae	252(224)
Chironomidae adults	35(39)
<u>Simuliidae</u>	
Simulium sp.	494(409)

MAY (continued)

	South Fork
	Kick
	n=4
	$\bar{x}$ (s.d.)
OTHER INVERTEBRATES	
Turbellaria	302(353)
Lumbriculidae	417(371)
Naididae	132(233)
Hydracarina	186(248)

JUNE (6-8-80)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
EPHEMEROPTERA						
Siphonuridae						
Ameletus sparsatus	8(15)	----	1(2)	5(4)	----	----
small Siphonuridae	13(23)	----	----	21(20)	6(12)	----
Baetidae						
Baetis tricaudatus	783(607)	195(33)	257(68)	315(99)	14(6)	3(2)
Baetis bicaudatus	----	----	----	----	56(49)	27(10)
Baetis hageni	134(69)	26(33)	32(37)	101(102)	----	----
Pseudocleon sp.	167(278)	39(47)	6(12)	260(177)	----	----
Heptageniidae						
Rhithrogena hageni	1,121(506)	539(244)	176(128)	59(33)	----	----
Rhithrogena robusta	8(4)	3(4)	1(2)	----	1(2)	----
Epeorus sp.	281(158)	131(47)	52(18)	74(48)	----	----
Cinygmula sp.	1,168(859)	269(103)	300(94)	458(167)	61(34)	50(49)
Ephemerellidae						
Ephemerella doddsi	8(6)	4(3)	3(3)	----	12(14)	1(2)
Ephemerella inermis	68(40)	50(9)	126(103)	126(52)	----	----
Ephemerella tibialis	150(93)	68(52)	423(373)	737(545)	----	----
Ephemerella flavilinea	50(48)	26(33)	9(7)	18(32)	----	1(2)
Ephemerella heterocaudata	2(3)	----	----	1(2)	----	1(2)
Ephemerella spinifera	----	----	----	1(2)	----	----
small Ephemerella sp.	55(52)	69(48)	55(47)	148(169)	----	6(12)
Leptophlebiidae						
Paraleptophlebia heteronea	8(5)	7(6)	1(2)	6(8)	----	----
PLECOPTERA						
Pteronarcidae						
Pteronarcys californica	----	----	----	4(3)	----	----
Pteronarcella badia	221(182)	99(102)	38(26)	73(58)	----	----

JUNE (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
<u>Nemouridae</u>						
Zapada columbiana	----	----	----	----	1(2)	----
small Nemouridae	----	----	12(24)	----	----	----
<u>Capniidae</u>						
Isocapnia sp.	----	----	----	----	6(12)	1(2)
Capnia sp.	----	----	----	----	6(12)	----
<u>Perlidae</u>						
Classenia sabulosa	----	8(11)	4(3)	3(2)	----	----
Hesperaperla pacifica	2(2)	----	----	5(5)	----	----
small Perlidae	----	----	----	27(34)	----	----
<u>Perlodidae</u>						
Skwala parallela	0.9(2)	----	----	----	----	----
Isogenoides colubrinus	2(2)	1(2)	1(2)	2(3)	----	----
Diura knowltoni	0.9(2)	----	----	----	8(7)	11(6)
Isoperla fulva	8(9)	5(3)	25(24)	5(5)	----	----
Isoperla patricia	----	1(2)	----	----	----	----
small Perlodidae	8(13)	----	----	18(36)	----	----
<u>Chloroperlidae</u>						
Sweltsa coloradensis	5(6)	2(2)	----	1(2)	0.3(1)	----
Triznaka sp.	62(22)	8(11)	8(5)	13(3)	----	----
Suwallia pallidula	----	17(20)	----	----	2(4)	----
Suwallia autumnata	20(41)	----	----	----	2(3)	2(3)
Utaperla sopladora	0.9(2)	----	----	----	----	----
small Chloroperlidae	19(14)	14(10)	3(4)	17(12)	----	----
<u>TRICHOPTERA</u>						
<u>Hydropsychidae</u>						
Arctopsyche grandis	----	----	1(2)	----	----	----
Symphitopsyche oslari	30(22)	38(12)	17(14)	8(11)	----	----
Symphitopsyche cockerelli	0.9(2)	1(2)	----	----	----	----
Hydropsyche occidentalis	19(18)	16(8)	7(8)	4(4)	----	----
small Hydropsychidae	3(6)	3(4)	7(12)	----	----	----

JUNE (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
<u>Rhyacophilidae</u>						
Rhyacophila angelita	3(6)	3(6)	2(2)	1(2)	1(2)	---
Rhyacophila bifila	---	---	1(2)	---	1(2)	---
Rhyacophila verrula	---	---	---	---	---	1(2)
small Rhyacophila sp.	6(12)	---	---	6(7)	7(12)	---
<u>Glossosomatidae</u>						
Glossosoma sp.	3(4)	1(2)	1(2)	---	---	---
<u>Brachycentridae</u>						
Brachycentrus sp.	8(13)	---	9(11)	---	---	---
<u>Limnephilidae</u>						
Onocosmoecus sp.	2(2)	---	---	---	---	---
<u>COLEOPTERA</u>						
<u>Elmidae</u>						
Optioservus quadrimaculatus	6(12)	---	---	---	---	---
Brychius sp.	---	---	2(3)	---	---	---
<u>DIPTERA</u>						
<u>Blephariceridae</u>						
<u>Tipulidae</u>						
Hexatoma sp.	0.9(2)	1(2)	1(2)	---	---	---
<u>Simuliidae</u>						
Simulium sp.	328(115)	104(29)	4,880(4,133)	4,186(5,390)	35(41)	20(33)
Simulium arcticum pupae	---	1(2)	9(18)	1(2)	6(12)	---
<u>Chironomidae</u>						
Chironomidae larvae	2,471(1,538)	1,654(1,182)	1,280(367)	3,380(1,353)	6,761(2,084)	6,724(572)
Chironomidae pupae	---	---	36(31)	32(23)	413(358)	145(122)
Chironomidae adults	13(23)	9(11)	50(30)	6(12)	25(15)	19(24)
<u>Tanyderidae</u>						
Protanyderus sp.	0.9(2)	1(2)	1(2)	---	---	---
<u>Atherididae</u>						
Atherix variegata	0.9(2)	1(2)	1(2)	---	---	---

JUNE (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
Empididae						
Chelifera sp.	-----	-----	6 (12)	-----	-----	-----
OTHER INVERTEBRATES						
Turbellaria	-----	-----	-----	-----	450 (293)	167 (59)
Nematoda	-----	-----	-----	-----	48 (39)	6 (12)
Hirudinea						
Piscicola	0.9 (2)	-----	-----	-----	-----	-----
Oligochaeta						
Lumbriculidae	-----	18 (36)	20 (25)	226 (252)	646 (413)	181 (128)
Naididae	6 (12)	-----	194 (127)	50 (37)	120 (127)	408 (464)
Hydracarina	6 (12)	9 (11)	26 (49)	33 (66)	822 (582)	210 (103)
COLLEMBOLA	12 (24)	-----	-----	6 (12)	-----	-----

JULY (7-11-80)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
EPHEMEROPTERA						
Siphonuridae						
small Siphonuridae	7(12)	16(23)	1(2)	----	----	----
Baetidae						
Baetis tricaudatus	635(438)	572(162)	452(213)	70(50)	20(22)	2(2)
Baetis bicaudatus	36(34)	6(5)	5(4)	----	95(41)	47(27)
Baetis hageni	60(18)	28(8)	317(311)	14(21)	----	----
Baetis propinquus	12(14)	7(8)	1(2)	----	----	----
Pseudocleon sp.	254(129)	174(68)	400(272)	156(112)	----	----
Heptageniidae						
Rhithrogena hageni	89(55)	56(26)	273(182)	81(90)	----	1(2)
Epeorus sp.	176(65)	92(18)	365(145)	39(26)	----	----
Epeorus longimanus	----	----	----	----	3(2)	2(3)
Epeorus deceptivus	----	----	----	----	1(2)	----
small Epeorus sp.	----	----	----	----	12(14)	----
Cinygmula sp.	305(129)	179(53)	318(176)	59(34)	160(75)	117(77)
Ephemerellidae						
Ephemerella doddsi	68(83)	50(55)	39(42)	14(19)	12(14)	----
Ephemerella inermis	5(4)	----	17(20)	3(2)	1(2)	----
Ephemerella tibialis	282(220)	87(24)	485(229)	59(40)	2(3)	2(3)
Ephemerella flavilinea	11(9)	10(12)	52(10)	8(9)	----	----
Ephemerella heterocaudata	1(2)	----	2(3)	2(3)	2(3)	----
Ephemerella spinifera	----	----	5(4)	1(2)	----	----
small Ephemerella sp.	2(3)	3(6)	----	----	----	----
Leptophlebiidae						
Paraleptophlebia heteronea	2(2)	1(2)	6(7)	1(2)	----	----

JULY (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
PLECOPTERA						
<i>Pteronarcys californica</i>	----	----	2(2)	----	----	----
<i>Pteronarcella badia</i>	56(45)	18(14)	226(94)	36(32)	----	----
<i>Taeniopterygidae</i>						
<i>Taenionema pacificum</i>	42(49)	52(37)	300(258)	33(26)	----	----
<i>Nemouridae</i>						
<i>Zapada cinctipes</i>	1(2)	3(6)	8(13)	----	----	----
<i>Zapada columbiana</i>	----	----	----	----	----	----
<i>Amphinemura</i> sp.	----	----	----	----	19(15)	8(7)
<i>Visoka cataractae</i>	----	----	----	----	1(2)	1(2)
<i>Capniidae</i>						
<i>Isocapnia</i> sp.	----	----	----	----	2(3)	2(3)
<i>Capnia</i> sp.	----	----	----	----	1(2)	----
small <i>Capniidae</i>	44(59)	18(23)	9(14)	8(5)	----	----
<i>Perlidae</i>						
<i>Classenia sabulosa</i>	2(2)	----	6(8)	2(3)	----	----
<i>Hesperaperla pacifica</i>	21(14)	2(3)	20(26)	----	----	----
small <i>Perlidae</i>	----	39(33)	----	----	----	----
<i>Pelodidae</i>						
<i>Megarcys watertoni</i>	1(2)	----	----	----	----	----
<i>Diura knowltoni</i>	----	----	----	----	11(13)	2(3)
<i>Setvena bradleyi</i>	----	----	----	----	1(2)	----
small <i>Perlodidae</i>	18(23)	6(5)	18(18)	3(4)	----	----
<i>Chloroperlidae</i>						
<i>Sweltsa coloradensis</i>	----	----	----	----	3(2)	2(2)
<i>Suwallia pallidula</i>	11(6)	3(2)	9(12)	----	0.3(2)	2(3)
<i>Suwallia autumnata</i>	60(42)	17(9)	71(25)	5(4)	4(3)	1(2)
small <i>Chloroperlidae</i>	7(5)	10(11)	10(18)	5(11)	8(11)	1(2)

JULY (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
TRICHOPTERA						
<u>Hydropsychidae</u>						
Arctopsyche grandis	119(123)	61(73)	81(67)	14(18)	----	----
Symphitopsyche oslari	53(56)	10(12)	26(17)	7(5)	----	----
Hydropsyche occidentalis	27(19)	6(3)	24(21)	4(5)	----	----
small Hydropsychidae	34(51)	14(23)	----	----	----	----
Hydropsychidae pupae	8(7)	2(2)	8(8)	2(3)	----	----
<u>Rhyacophilidae</u>						
Rhyacophila angelita	22(34)	8(6)	12(13)	6(6)	1(2)	1(2)
Rhyacophila bifila	----	----	8(15)	----	----	----
Rhyacophila verrula	----	----	----	----	2(3)	----
<u>Glossosomatidae</u>						
Glossosoma sp.	----	----	2(3)	----	----	----
<u>Brachycentridae</u>						
Brachycentrus sp.	76(86)	14(5)	17(18)	26(53)	----	----
DIPTERA						
<u>Deuterophlebiidae</u>						
Blephariceridae	----	----	1(2)	----	----	----
Tipulidae	1(2)	2(5)	1(2)	1(2)	----	----
Hexatoma sp.	4(2)	----	----	----	----	----
<u>Simuliidae</u>						
Simulium sp.	38(39)	186(156)	270(290)	32(40)	7(12)	4(5)
<u>Chironomidae</u>						
Chironomidae larvae	1,379(484)	938(364)	1,906(766)	323(153)	3,537(2,026)	4,749(1,508)
Chironomidae pupae	30(26)	14(5)	25(7)	7(6)	155(77)	192(48)
Chironomidae adults	33(24)	4(6)	16(9)	5(9)	3(6)	----
<u>Tanyderidae</u>						
Protanyderus sp.	2(3)	1(2)	5(2)	----	----	----
<u>Athericidae</u>						
Atherix variegata	1(2)	----	2(2)	1(2)	----	----

JULY (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
OTHER INVERTEBRATES						
Turbellaria	9(14)	5(5)		1(2)	327(125)	305(118)
Nematoda	----	12(14)	17(27)	11(8)	48(81)	----
Oligochaeta						
Lumbriculidae	9(10)	2(5)	1(2)	2(3)	284(248)	245(128)
Naididae	----	3(6)	450(480)	52(102)	168(163)	138(53)
Hydracarina	19(36)	86(113)	89(94)	8(8)	402(412)	204(329)

AUGUST (8-11-80)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
COLLEMBOLA	----	----	1(2)	----	----	----
EPHEMEROPTERA						
Siphonuridae						
small Siphonuridae						
Baetidae	11(12)	11(13)	11(12)	----	----	----
Baetis tricaudatus	1,403(766)	1,346(291)	1,632(1,014)	793(268)	200(102)	102(93)
Baetis bicaudatus	----	35(55)	----	----	47(28)	23(7)
Baetis propinquus	----	----	----	2(5)	----	----
Baetis hageni	----	----	4(2)	8(7)	----	----
Pseudocleon sp.	----	----	70(109)	2(3)	----	----
Heptageniidae						
Rhithrogena hageni	371(91)	227(97)	258(73)	66(20)	----	----
Rhithrogena robusta	----	----	82(41)	36(33)	----	----
Epeorus sp.	1(2)	3(4)	60(32)	19(8)	----	----
Epeorus longimanus	----	----	----	----	2(2)	----
Epeorus deceptivus	----	----	----	----	7(14)	----
Epeorus (Iron) sp.	----	----	29(11)	4(6)	----	1(2)
Cinygmula sp.	62(49)	68(74)	141(68)	216(156)	----	----
Ephemereleididae					113(71)	62(27)
Ephemerelella doddsi	167(121)	143(57)	56(35)	30(16)	----	----
Ephemerelella inermis	5(6)	1(2)	96(159)	46(34)	----	----
Ephemerelella tibialis	46(20)	2(3)	124(30)	59(35)	1(2)	1(2)
Ephemerelella flavilinea	----	----	2(2)	5(7)	----	----
Ephemerelella heterocaudata	----	----	----	----	1(2)	----
Ephemerelella spinifera	----	----	8(14)	----	----	----
Leptophlebiidae						
Paraleptophlebia heteronea	2(3)	1(2)	----	3(3)	----	----

AUGUST (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
PLECOPTERA						
Pteronarcidae						
Pteronarcys californica	---	---	4(3)	---	---	---
Pteronarcella badia	3(4)	1(2)	54(58)	23(25)	---	---
Taeniopterygidae						
Taenionema pacificum	---	---	90(48)	49(14)	---	6(12)
Nemouridae						
Zapada cinctipes	---	---	38(56)	19(17)	---	---
Zapada columbiana	---	---	---	---	8(9)	5(4)
Capniidae						
Isocapnia sp.	---	---	---	---	9(18)	---
Capnia sp.	---	---	---	---	---	42(69)
small Capniidae	33(66)	6(7)	233(239)	234(122)	---	---
Perlidae						
Classenia sabulosa	25(28)	16(26)	7(8)	7(9)	---	---
Hesperoperla pacifica	23(18)	8(5)	11(14)	17(17)	---	---
small Perlidae	62(38)	29(44)	53(9)	74(84)	---	---
Perlodidae						
Isogenoides colubrinus	---	---	1(2)	---	---	---
Megarcys watertoni	---	---	1(2)	---	---	---
Diura knowltoni	---	---	10(12)	---	12(12)	---
Isoperla patricia	---	---	10(15)	---	---	---
small Perlodidae	---	44(53)	129(47)	17(27)	---	---
Chloroperlidae						
Sweltsa coloradensis	---	---	---	1(2)	1(2)	1(2)
Suwallia pallidula	3(3)	---	4(5)	6(8)	---	---
Suwallia autumnata	5(2)	14(25)	23(6)	6(8)	---	---
small Chloroperlidae	1(2)	45(40)	75(64)	25(18)	6(12)	---

AUGUST (continued)

	Bible Camp		Kokanne Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
TRICHOPTERA						
<u>Hydropsychidae</u>						
Arctopsyche grandis	38(30)	43(37)	808(328)	207(89)	----	----
Parapsyche elsis	----	----	----	----	1(2)	----
Symphitopsyche oslari	17(15)	11(11)	9(5)	3(3)	----	----
Symphitopsyche cockerelli	86(65)	83(74)	27(15)	21(38)	----	----
Hydropsyche occidentalis	17(20)	11(14)	6(10)	----	----	----
small Hydropsychidae	119(126)	350(319)	27(47)	11(21)	----	----
Hydropsychidae pupae	----	----	3(3)	2(2)	----	----
<u>Rhyacophilidae</u>						
Rhyacophila angelita	----	----	13(10)	----	1(2)	7(12)
Rhyacophila vao	----	----	1(2)	----	----	----
Rhyacophila vagrita	----	----	----	----	1(2)	----
<u>Glossosomatidae</u>						
Glossosoma sp.	----	----	497(282)	106(21)	----	----
<u>Hydroptilidae</u>						
Ochrotrichia	----	----	----	3(6)	----	----
<u>Brachycentridae</u>						
Brachycentrus sp.	17(14)	4(3)	146(140)	65(41)	----	----
COLEOPTERA						
<u>Elmidae</u>						
Zaitzevia parvula	----	----	4(7)	----	----	----
Optioservus quadrimaculatus	----	----	1(2)	----	----	----
DIPTERA						
<u>Deuterophlebiidae</u>						
Tipulidae	----	----	1(2)	----	----	----
Hexatoma sp.	2(3)	2(3)	2(3)	2(3)	----	----

AUGUST (Continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=3 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
Simuliidae						
Simulium sp.	371(546)	1,796(2,211)	1,329(1,115)	149(99)	13(22)	8(11)
Simulium arcticum pupae	2(3)	91(148)	2(3)	----	----	----
Chironomidae						
Chironomidae larvae	1,118(413)	1,559(1,474)	2,935(1,039)	1,515(479)	7,819(1,973)	6,524(2,233)
Chironomidae pupae	2(3)	----	19(14)	1(2)	48(46)	77(94)
Chironomidae adults	----	----	8(14)	----	7(14)	49(44)
Tanyderidae						
Protanyderus sp.	----	----	1(2)	----	----	----
Athericidae						
Atherix variegata	1(2)	4(6)	12(3)	2(2)	----	----
OTHER INVERTEBRATES						
Turbellaria	2(5)	2(2)	2(3)	3(6)	490(94)	209(105)
Nematoda	3(4)	14(11)	181(303)	226(263)	12(14)	6(12)
Oligochaeta						
Lumbriculidae	----	1(2)	5(5)	34(30)	226(170)	100(65)
Naididae	----	6(12)	257(341)	172(196)	360(348)	84(95)
Hydracarina	27(34)	3(6)	368(255)	377(249)	798(366)	102(53)

SEPTEMBER (9-11-80)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
EPHEMEROPTERA						
Siphonuridae						
Ameletus cooki	20(22)	2(3)	3(6)	----	----	----
small Siphonuridae	3(6)	----	6(12)	----	----	----
Baetidae						
Baetis tricaudatus	1,979(753)	540(90)	456(170)	306(219)	26(41)	43(74)
Baetis bicaudatus	----	----	----	----	175(109)	270(211)
Baetis hageni	347(138)	86(53)	19(23)	17(31)	----	----
Pseudocleon sp.	41(38)	4(6)	1(2)	4(8)	----	----
Heptageniidae						
Rhithrogena hageni	986(149)	517(255)	524(127)	668(608)	----	----
Rhithrogena robusta	11(14)	2(2)	23(9)	5(11)	----	1(2)
Epeorus sp.	75(53)	16(10)	6(12)	2(2)	----	----
Epeorus grandis	----	----	----	----	5(5)	2(3)
Epeorus (Iron) sp.	----	1(2)	----	1(2)	1(2)	----
Epeorus longimanus	----	----	----	----	----	----
Cinygmula sp.	674(180)	324(161)	282(146)	212(318)	44(21)	38(16)
Ephemerellidae						
Ephemerella doddsi	144(43)	116(21)	24(21)	38(32)	1(2)	----
Ephemerella inermis	457(126)	129(59)	79(86)	60(45)	----	----
Ephemerella tibialis	3(4)	2(2)	56(43)	8(13)	----	----
Ephemerella flavilinea	----	----	----	1(2)	----	----
Ephemerella spinifera	----	----	----	2(3)	----	----
Leptophlebiidae						
Paraleptophlebia heteronea	47(30)	2(3)	2(2)	3(6)	----	----
PLECOPTERA						
Pteronarcidae						
Pteronarcys californica	----	----	8(5)	2(3)	----	----
Pteronarcella badia	----	1(2)	35(29)	22(25)	----	----

SEPTEMBER (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
<u>Taeniopterygidae</u>						
<u>Taenionema pacificum</u>	781(444)	419(278)	209(148)	261(331)	6(12)	----
<u>Nemouridae</u>						
<u>Zapada cinctipes</u>	24(10)	8(13)	41(29)	12(20)	7(12)	13(23)
<u>Zapada columbiana</u>	----	----	2(3)	----	7(7)	6(8)
<u>Capniidae</u>						
<u>small Capniidae</u>	274(168)	133(65)	137(60)	221(159)	24(34)	27(32)
<u>Peltoperlidae</u>						
<u>Peltoperla brevis</u>	----	----	----	----	1(2)	----
<u>Perlidae</u>						
<u>Classenia sabulosa</u>	6(4)	8(6)	48(37)	15(21)	----	----
<u>Hesperoperla pacifica</u>	37(32)	5(5)	5(2)	4(6)	----	----
<u>small Perlidae</u>	52(32)	15(24)	12(14)	16(23)	----	----
<u>Perlodidae</u>						
<u>Skwala parallela</u>	----	6(12)	----	1(2)	----	----
<u>Isogenoides colubrinus</u>	----	----	1(2)	3(3)	----	----
<u>Diura knowltoni</u>	1(2)	----	----	----	----	----
<u>Isoperla fulva</u>	26(17)	14(9)	48(80)	21(19)	2(2)	7(12)
<u>Isoperla patricia</u>	----	----	2(3)	1(1)	----	----
<u>small Perlodidae</u>	5(7)	----	1(2)	1(1)	----	----
<u>Chloroperlidae</u>						
<u>Sweltsa coloradensis</u>	----	1(2)	7(8)	4(5)	----	----
<u>Suwallia pallidula</u>	4(6)	3(4)	11(11)	2(2)	----	----
<u>Suwallia autumnata</u>	2(3)	----	5(9)	----	----	----
<u>Chloroperlid sp. A</u>	1(2)	----	2(3)	35(47)	----	----
<u>small Chloroperlidae</u>	6(12)	6(12)	104(93)	86(104)	----	----
<u>TRICHOPTERA</u>						
<u>Hydropsychidae</u>						
<u>Arctopsyche grandis</u>	18(18)	22(16)	196(66)	54(53)	----	----
<u>Symphitopsyche oslari</u>	197(72)	195(145)	2(2)	1(1)	----	----

SEPTEMBER (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
Hydropsychidae (cont.)						
Symphitopsys cockerelli	24(7)	54(32)	11(9)	7(10)	---	---
Hydropsysche occidentalis	48(18)	46(28)	4(4)	---	---	---
small Hydropsychidae	121(98)	149(91)	127(143)	185(262)	---	---
Rhyacophilidae						
Rhyacophila angelita pupae	2(2)	---	2(2)	1(1)	---	---
Rhyacophila coloradensis	---	---	---	---	3(2)	2(3)
small Rhyacophila sp.	---	6(12)	---	---	---	---
Glossosomatidae						
Glossosoma sp.	30(22)	1(2)	197(341)	94(152)	---	---
Brachycentridae						
Brachycentrus sp.	9(13)	8(13)	64(120)	10(8)	---	---
DIPTERA						
Tipulidae						
Hexatoma sp.	2(3)	2(3)	2(2)	3(2)	---	---
Ceratopogonidae	---	1(2)	---	---	---	---
Simuliidae						
Simulium sp.	33(19)	75(68)	66(21)	92(112)	19(35)	3(4)
Simulium arcticum pupae	2(3)	2(3)	1(2)	1(1)	---	---
Chironomidae						
Chironomidae larvae	1,929(487)	1,296(560)	1,748(703)	886(793)	4,484(1,737)	4,136(429)
Chironomidae pupae	75(33)	14(16)	64(35)	27(41)	138(33)	127(88)
Chironomidae adults	61(60)	11(11)	8(13)	---	7(5)	2(2)
Tanyderidae						
Protanyderus sp.	---	---	---	---	---	---
Athericidae						
Atherix variegata	1(2)	1(2)	4(4)	4(6)	---	---
Empididae						
Chelifera sp.	---	---	6(12)	---	---	---
Hemerodromia sp.	---	---	---	---	6(12)	---

SEPTEMBER (continued)

	Bible Camp		Kokanee Bend		South Fork	
	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)	Kick n=4 $\bar{x}$ (s.d.)	Circular n=4 $\bar{x}$ (s.d.)
OTHER INVERTEBRATES						
Turbellaria						
Nematoda	37 (42)	6 (12)	4 (2) 27 (46)	5 (7) 54 (77)	245 (224) 6 (12)	169 (41) 30 (60)
Oligochaeta						
Lumbriculidae	2 (3)	2 (5) 54 (93)	26 (31) 50 (58)	10 (18) 297 (528)	201 (117) 198 (229)	290 (61) 72 (102)
Naididae		71 (109)	67 (95)	126 (154)	354 (305)	114 (135)
Hydracarina	180 (192)					

OCTOBER, NOVEMBER AND DECEMBER, 1980

	October 15, 1980			November 8, 1980			December 31, 1980		
	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)		Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=2) $\bar{x}$ (s.d.)		Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	
EPHEMEROPTERA									
Siphonuridae									
Ameletus cooki	15(10)	4(6)		21(10)	2(3)		267(212)	----	
Ameletus sparsatus	----	----		----	----		1(2)	----	
small Siphonuridae	97(41)	50(23)		----	----		123(44)	73(33)	
Baetidae									
Baetis tricaudatus	1,633(826)	536(528)		2(3)	137(172)		524(584)	38(30)	
Pseudocleon sp.	----	16(23)		----	----		----	----	
Heptageniidae									
Rhythrogena sp.	787(376)	681(179)		143(44)	128(87)		129(62)	26(33)	
Rhythrogena robusta	4(7)	23(15)		9(5)	20(23)		----	----	
Epeorus sp.	111(133)	4(3)		8(14)	----		18(16)	1(2)	
Cinygmula sp.	140(43)	285(86)		224(27)	213(263)		171(95)	72(91)	
small Heptageniidae	648(660)	----		----	156(221)		520(459)	----	
Ephemerellidae									
Ephemerella inermis	407(81)	221(135)		73(33)	144(132)		504(756)	10(17)	
Drunella doddsi	96(33)	17(9)		6(8)	3(4)		----	----	
Drunella spinifera	----	2(3)		----	----		----	----	
Leptophlebiidae									
Paraleptophlebia heteronea	12(10)	10(3)		11(8)			119(105)	4(3)	
PLECOPTERA									
Pteronarcidae									
Pteronarcella badia	3(3)	14(15)		2(3)	20(28)		5(6)	2(3)	
Taeniopterygidae									
Taenionema pacificum	775(192)	779(404)		30(23)	119(142)		235(164)	----	
Nemouridae									
Zapada cinctipes	11(11)	26(15)		9(8)	53(74)		1(2)	----	
Zapada columbiana	----	----		----	1(2)		----	----	
Prostoia besametsa	2(3)	----		----	----		2(3)	----	

OCTOBER, NOVEMBER AND DECEMBER (continued)

	October 15, 1980			November 8, 1980			December 31, 1980		
	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=2) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	
Capniidae									
Utacapnia sp.	----	----	327 (52)	37 (26)	1,829 (1,016)	636 (352)	55 (36)		
Capnia sp.	----	----	37 (26)	----	314 (274)	937 (414)	399 (57)		
small Capniidae	158 (33)	242 (22)	----	----	----	----	----		
Perlidae									
Classenia sabulosa	10 (2)	16 (7)	----	----	----	2 (3)	----		
Hesperoperla pacifica	29 (15)	16 (9)	----	----	----	----	----		
Perlodidae									
Skwalla parallela	----	----	1 (2)	----	----	----	----		
Isogenoides colubrinus	----	1 (2)	----	----	----	----	----		
Cultus sp.	----	----	----	----	----	2 (2)	----		
Isoperla fulva	40 (15)	78 (51)	2 (3)	17 (15)	----	10 (9)	----		
Isoperla patricia	----	----	----	----	----	2 (3)	----		
small Perlodidae	8 (14)	25 (41)	----	----	----	5 (5)	----		
Chloroperlidae									
Sweltsa coloradensis	4 (7)	6 (6)	2 (2)	21 (21)	----	4 (7)	----		
Triznaka sp.	----	----	----	----	----	3 (5)	----		
small Chloroperlidae	39 (39)	105 (78)	----	----	----	55 (26)	----		
TRICHOPTERA									
Hydropsychidae									
Arctopsyche grandis	26 (7)	227 (81)	7 (6)	8 (11)	----	----	----		
Hydropsyche oslari	174 (3)	1 (0)	1 (2)	----	----	----	1 (2)		
Hydropsyche cockerelli	6 (6)	1 (2)	----	----	----	----	----		
Hydropsyche occidentalis	12 (11)	1 (2)	----	----	----	----	----		
small Hydropsychidae	68 (60)	----	----	1 (2)	----	13 (15)	11 (14)		
Rhyacophilidae									
Rhyacophila bifila	----	1 (2)	----	----	----	----	----		

OCTOBER, NOVEMBER AND DECEMBER (continued)

	October 15, 1980			November 8, 1980			December 31, 1980		
	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)		Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=2) $\bar{x}$ (s.d.)		Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	
Glossosomatidae									
Glossosoma sp.	15(11)	236(12)		----	3(4)		3(3)	----	
Brachycentridae									
Brachycentrus sp.	12(3)	23(20)		5(9)	14(19)		----	1(2)	
DIPTERA									
Tipulidae									
Hexatoma sp.	6(5)	----		----	----		----	1(2)	
Antocha sp.	----	----		----	----		----	2(2)	
Simuliidae									
Simulium sp.	24(24)	----		----	----		16(14)	1(2)	
Chironomidae									
Chironomidae larvae	1,208(331)	514(303)		204(167)	960(1,269)		898(350)	725(204)	
Chironomidae pupae	24(24)	41(50)		1(2)	15(21)		----	----	
Chironomidae adults	----	----		----	2(2)		----	----	
Empididae									
Hemerodromia sp.	1(2)	----		----	----		----	1(2)	
OTHER INVERTEBRATES									
Turbellaria	----	2(3)		1(2)	----		----	----	
Nematoda	----	----		24(42)	57(34)		----	16(28)	
Oligochaeta									
Lumbriculidae	1(2)	1(2)		2(3)	3(4)		----	----	
Hydracarina	9(16)	70(106)		----	----		----	----	

FEBRUARY AND MARCH, 1981

	February 4, 1981			February 26, 1981			March 30, 1981		
	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	
EPHEMEROPTERA									
Siphonuridae									
Ameletus cooki	2(2)	1(2)	----	16(18)	----	----	----	----	
Ameletus sparsatus	19(26)	----	----	----	----	----	----	----	
Ameletus oregonensis	----	----	----	1(2)	----	----	----	----	
small Siphonuridae	22(24)	17(29)	202(179)	16(28)	----	65(90)	----	----	
Baetidae									
Baetis tricaudatus	3,759(1,973)	2,072(1,589)	2,495(381)	1,406(346)	331(151)	765(153)	89(131)	765(153)	
Baetis hageni	8(14)	33(57)	12(21)	----	448(448)	89(131)	89(131)	89(131)	
Heptageniidae									
Rhythrogena sp.	2,244(1,169)	1,544(1,581)	3,346(814)	792(620)	3,822(1,772)	545(258)	4(3)	545(258)	
Rhythrogena robusta	----	----	----	----	6(10)	4(3)	73(93)	73(93)	
Epeorus sp.	74(72)	45(52)	11(14)	----	307(326)	73(93)	73(93)	73(93)	
Epeorus grandis	1(2)	----	----	----	----	----	----	----	
Cinygmula sp.	367(281)	529(717)	910(684)	131(100)	896(612)	271(244)	271(244)	271(244)	
small Heptageniidae	1,416(2,453)	----	----	----	----	----	----	----	
Ephemerellidae									
Ephemerella inermis	228(146)	202(196)	70(30)	42(38)	74(50)	236(362)	1(2)	236(362)	
Drunella doddsi	44(19)	6(5)	22(20)	4(3)	9(8)	1(2)	1(2)	1(2)	
Drunella flavilinea	----	8(14)	----	----	8(14)	16(14)	16(14)	16(14)	
Drunella spinifera	----	----	1(2)	----	1(2)	1(2)	1(2)	1(2)	
Leptophlebiidae									
Paraleptophlebia heteronea	72(26)	104(20)	136(74)	17(20)	275(123)	31(34)	31(34)	31(34)	
PLECOPTERA									
Pteronarcidae									
Pteronarcys californica	----	2(3)	----	3(5)	----	1(2)	1(2)	1(2)	
Pteronarcella badia	24(17)	27(29)	35(23)	5(5)	13(15)	14(10)	14(10)	14(10)	

FEBRUARY AND MARCH (continued)

	February 4, 1981			February 26, 1981			March 30, 1981		
	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)	Bible Camp Kick (n=3) $\bar{x}$ (s.d.)	Kokanee Bend Kick (n=3) $\bar{x}$ (s.d.)
Taeniopterygidae									
Taeniopterygion	436(146)	412(62)	4(7)	159(130)	4(7)	5(5)			
Nemouridae									
Zapada cinctipes	11(17)	13(12)	9(6)	5(9)	8(14)				
Prostoma besametsa	----	13(18)	----	5(5)	2(2)	1(2)			
Capniidae									
Utacapnia sp.	17(19)	51(22)	----	277(411)	----	----			
Utacapnia poda	----	----	1(2)	15(21)	----	----			
Utacapnia trava	----	----	1(2)	----	----	----			
Utacapnia distincta	1(2)	----	5(5)	1(2)	----	----			
Capnia sp.	107(20)	277(36)	16(20)	94(71)	11(11)	7(5)			
Isocapnia sp.	----	1(2)	----	8(2)	1(2)	----			
Perlidae									
Classenia sabulosa	26(20)	4(5)	10(9)	----	----	----			
Hesperoperla pacifica	20(12)	5(3)	5(2)	5(3)	2(2)	2(2)			
Perlodidae									
Isogenoides colubrinus	3(3)	----	1(0)	----	----	----			
Cultus sp.	----	----	4(5)	1(2)	3(3)	----			
Diura sp.	----	----	----	----	1(2)	----			
Isoperla fulva	31(14)	32(24)	60(39)	26(24)	28(23)	19(23)			
Isoperla patricia	6(6)	4(3)	4(5)	1(2)	1(2)	2(3)			
small Perlodidae	----	17(27)	----	----	----	----			
Chloroperlidae									
Sweltsa coloradensis	11(7)	15(5)	5(5)	10(9)	11(8)	4(2)			
Triznaka sp.	13(23)	22(31)	10(17)	7(12)	8(6)	38(15)			
small Chloroperlidae	90(56)	38(12)	44(18)	32(2)	17(15)	64(73)			

APPENDIX B

Table:

Flathead River Densities - $\bar{x}$ no./m² - Annual means and monthly means (Kick and Circular samples combined). October 1979 through September 1980.

Figures:

Mean number of invertebrates per square meter, October 1979 through September, 1980.

E = Ephemeroptera

P = Plecoptera

T = Trichoptera

Ch = Chironomidae

OD = Other Diptera

OI = Other Invertebrates

Bars represent monthly means (kick and circular samples combined);
I represents standard deviations.

Flathead River Densities

$\bar{x}$ no./m²

Annual Means and Monthly Means (Kick and Circular samples combined)

	October $\bar{x}$ (s.d.)	November	December	January	February
Bible Camp					
Ephemeroptera	5,422(2,592)	7,365(4,019)	3,291(1,284)	----	----
Plecoptera	3,549(1,224)	2,463(1,766)	645(404)	----	----
Trichoptera	967(926)	845(653)	210(201)	----	----
Chironomidae	355(220)	2,210(1,941)	1,308(1,030)	----	----
Other Diptera	18(12)	59(95)	15(16)	----	----
Other Invertebrate	124(227)	128(89)	30(45)	----	----
TOTAL	10,435(4,189)	13,070(7,841)	5,499(2,051)	----	----
Kokanee Bend					
Ephemeroptera	3,403(1,411)	2,692(2,565)	600(494)	797(777)	827(784)
Plecoptera	4,734(1,851)	4,042(3,854)	474(298)	422(375)	810(215)
Trichoptera	1,348(900)	1,130(1,900)	338(347)	428(445)	239(248)
Chironomidae	766(215)	4,026(6,755)	1,011(1,006)	899(987)	1,319(977)
Other Diptera	62(99)	36(36)	15(8)	25(31)	32(34)
Other Invertebrate	778(1,400)	98(195)	449(1,025)	51(68)	63(71)
TOTAL	11,091(5,314)	12,024(15,004)	2,886(1,883)	2,622(2,588)	3,290(1,712)
South Fork					
Ephemeroptera	5(7)	65(91)	167(84)	391(391)	294(147)
Plecoptera	14(12)	119(82)	111(77)	74(43)	78(108)
Trichoptera	0.3(1)	4(9)	1(1)	0	12(14)
Chironomidae	2,099(1,594)	8,293(4,004)	15,169(5,352)	10,397(9,253)	8,812(5,840)
Other Diptera	0	0	0	0	35(96)
Other Invertebrate	31(27)	392(314)	477(476)	1,030(798)	733(527)
TOTAL	2,149(1,618)	8,873(4,031)	15,925(5,741)	11,892(10,370)	9,964(6,281)

Flathead River Densities (cont.)

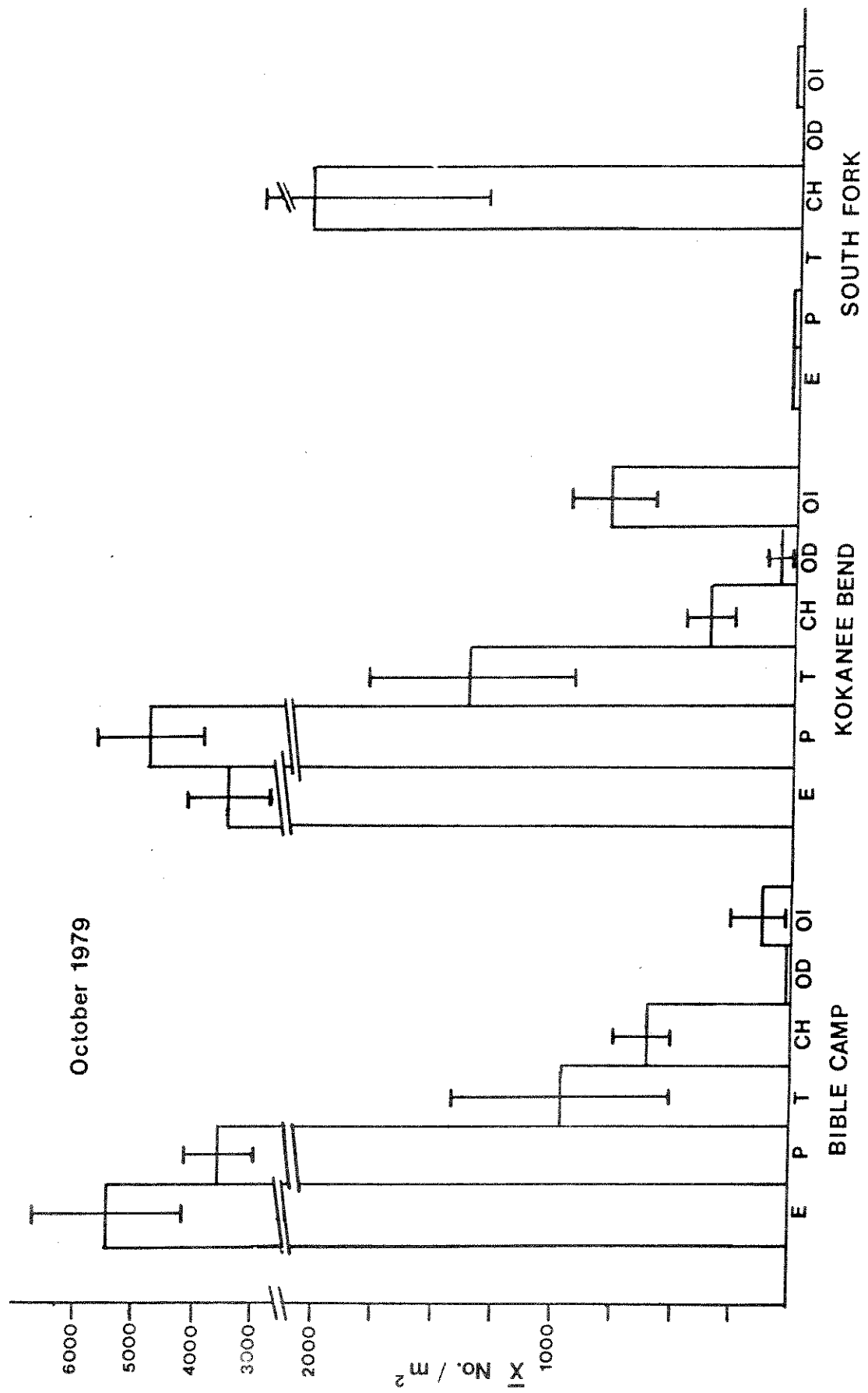
	March $\bar{x}$ (s.d.)	April	May	June	July
Bible Camp					
Ephemeroptera	3,861(1,596)	2,982(1,530)	----	2,723(2,092)	1,602(728)
Plecoptera	529(815)	164(173)	----	250(207)	234(110)
Trichoptera	130(86)	63(38)	----	68(32)	225(271)
Chironomidae	1,583(1,125)	1,388(700)	----	2,073(1,351)	1,199(467)
Other Diptera	19(27)	105(67)	----	222(139)	117(133)
Other Invertebrate	48(59)	21(35)	----	33(38)	73(85)
TOTAL	6,170(2,834)	4,723(1,629)	----	5,369(3,512)	3,450(1,437)
Kokanee Bend					
Ephemeroptera	585(205)	1,638(847)	----	1,862(977)	1,619(1,260)
Plecoptera	840(361)	196(112)	----	128(67)	385(368)
Trichoptera	177(97)	186(236)	----	31(20)	114(110)
Chironomidae	1,302(477)	1,758(1,004)	----	2,392(1,426)	1,141(1,001)
Other Diptera	50(30)	759(570)	----	4,542(4,460)	154(234)
Other Invertebrate	69(63)	194(204)	----	278(218)	314(395)
TOTAL	3,023(668)	4,731(2,340)	----	9,233(3,889)	3,727(2,861)
South Fork					
Ephemeroptera	521(379)	598(436)	653(278)	119(75)	238(125)
Plecoptera	108(152)	69(68)	130(109)	21(22)	34(26)
Trichoptera	15(18)	24(32)	13(12)	5(8)	2(2)
Chironomidae	12,163(5,594)	10,540(4,721)	8,898(3,544)	7,043(1,639)	5,218(1,697)
Other Diptera	51(135)	987(1,084)	494(409)	30(41)	5(8)
Other Invertebrate	1,323(919)	1,151(440)	1,037(907)	1,528(1,077)	1,061(602)
TOTAL	14,181(6,522)	13,369(6,126)	11,225(5,058)	8,746(1,769)	6,558(1,666)

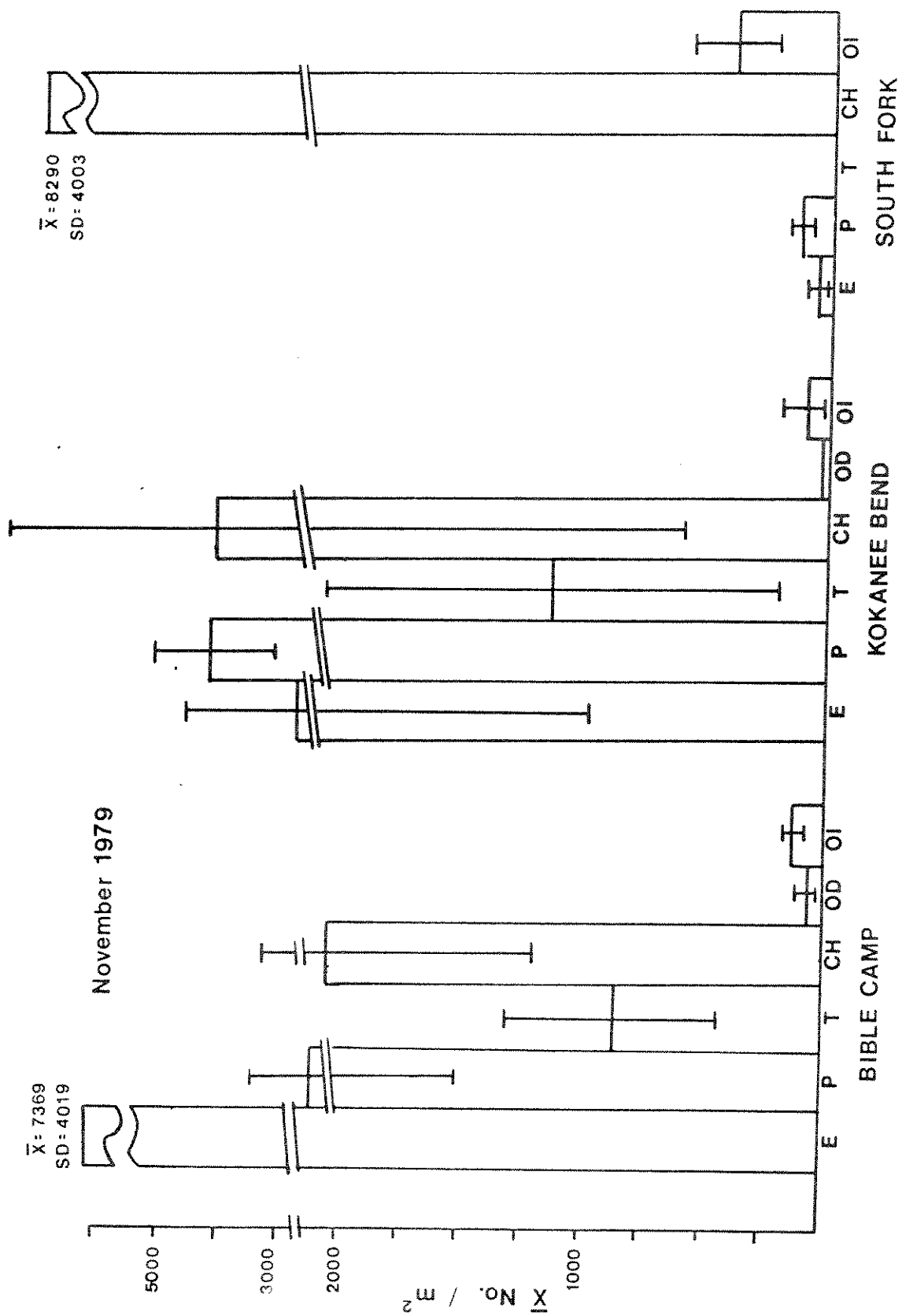
Flathead River Densities (cont.)

	August $\bar{x}$ (s.d.)	September	Annual Mean $\bar{x}$ (s.d.)
<u>Bible Camp</u>			n=9
Ephemeroptera	1,961(732)	3,263(1,701)	3,608(1,789)
Plecoptera	159(88)	917(179)	990(1,201)
Trichoptera	397(343)	463(167)	374(332)
Chironomidae	1,343(1,030)	1,382(658)	1,427(534)
Other Diptera	1,134(1,772)	58(50)	194(359)
Other Invertebrate	29(25)	176(172)	74(56)
TOTAL	5,022(3,453)	6,259(2,394)	6,666(3,072)
<u>Kokanee Bend</u>			n=9 ^{1/}
Ephemeroptera	1,842(959)	1,405(828)	1,738(899)
Plecoptera	640(255)	578(346)	1,335(1,753)
Trichoptera	897(655)	475(464)	522(483)
Chironomidae	1,905(1,219)	1,347(843)	1,739(992)
Other Diptera	665(908)	89(27)	708(1,465)
Other Invertebrate	814(638)	332(536)	370(269)
TOTAL	6,763(4,020)	4,226(2,677)	6,412(3,539)
<u>South Fork</u>			n=11 ^{2/}
Ephemeroptera	279(151)	302(201)	330(193)
Plecoptera	45(63)	49(39)	76(37)
Trichoptera	5(8)	3(3)	8(7)
Chironomidae	7,262(2,107)	4,447(1,189)	8,931(3,078)
Other Diptera	11(16)	14(25)	148(313)
Other Invertebrate	1,193(885)	848(520)	979(344)
TOTAL	8,795(2,514)	5,663(1,764)	10,472(3,186)

1/ January and February excluded.

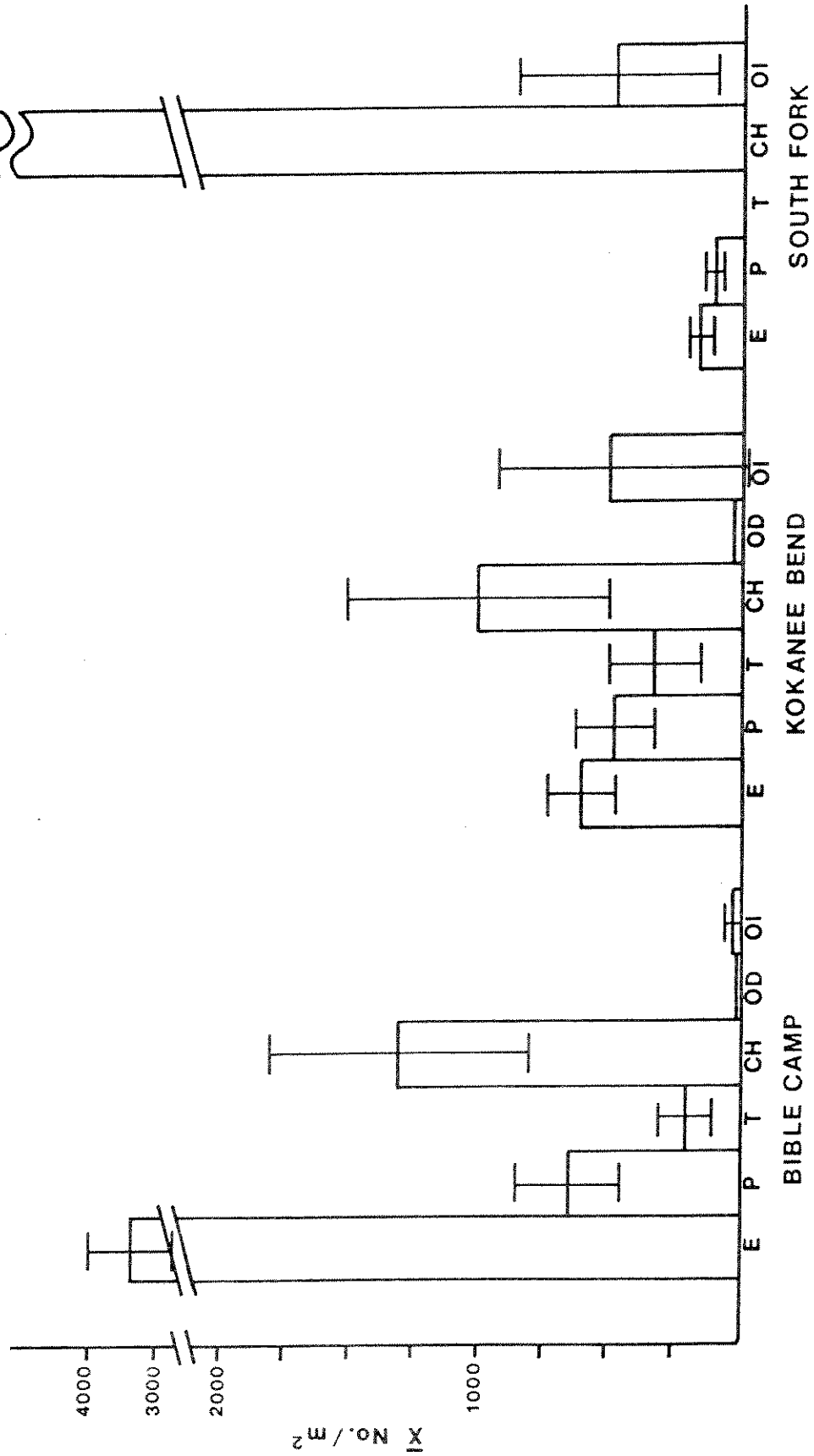
2/ October excluded.

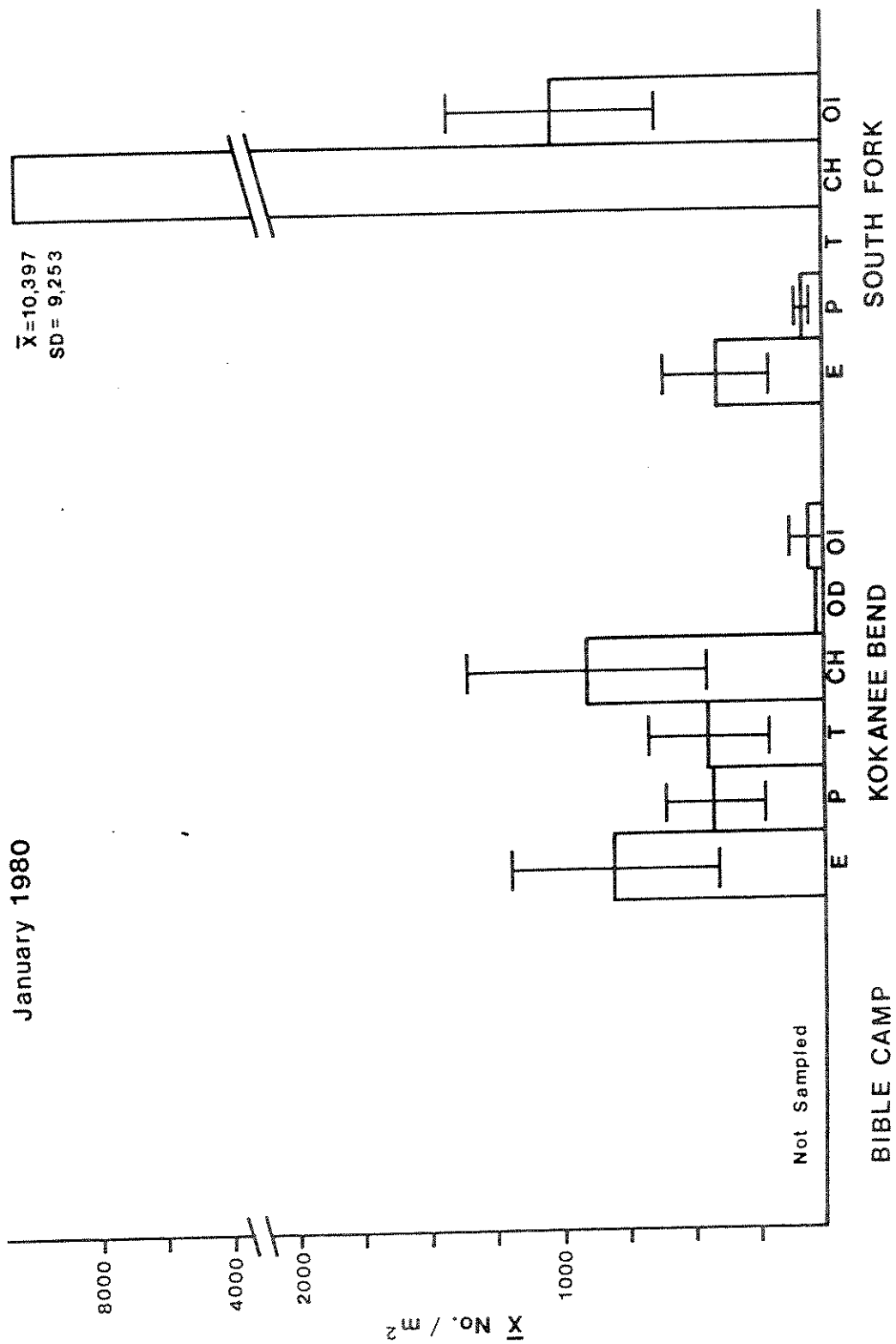


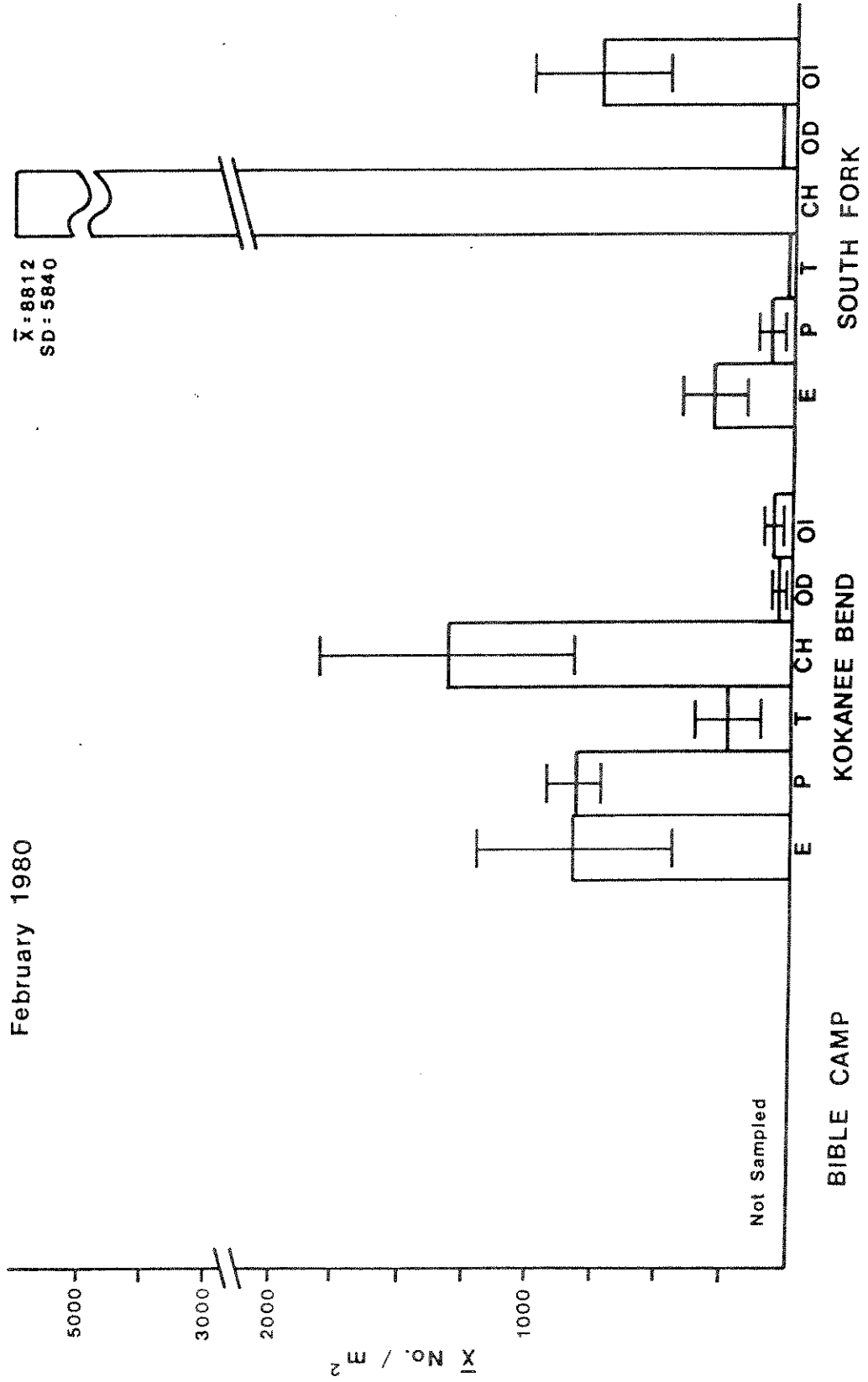


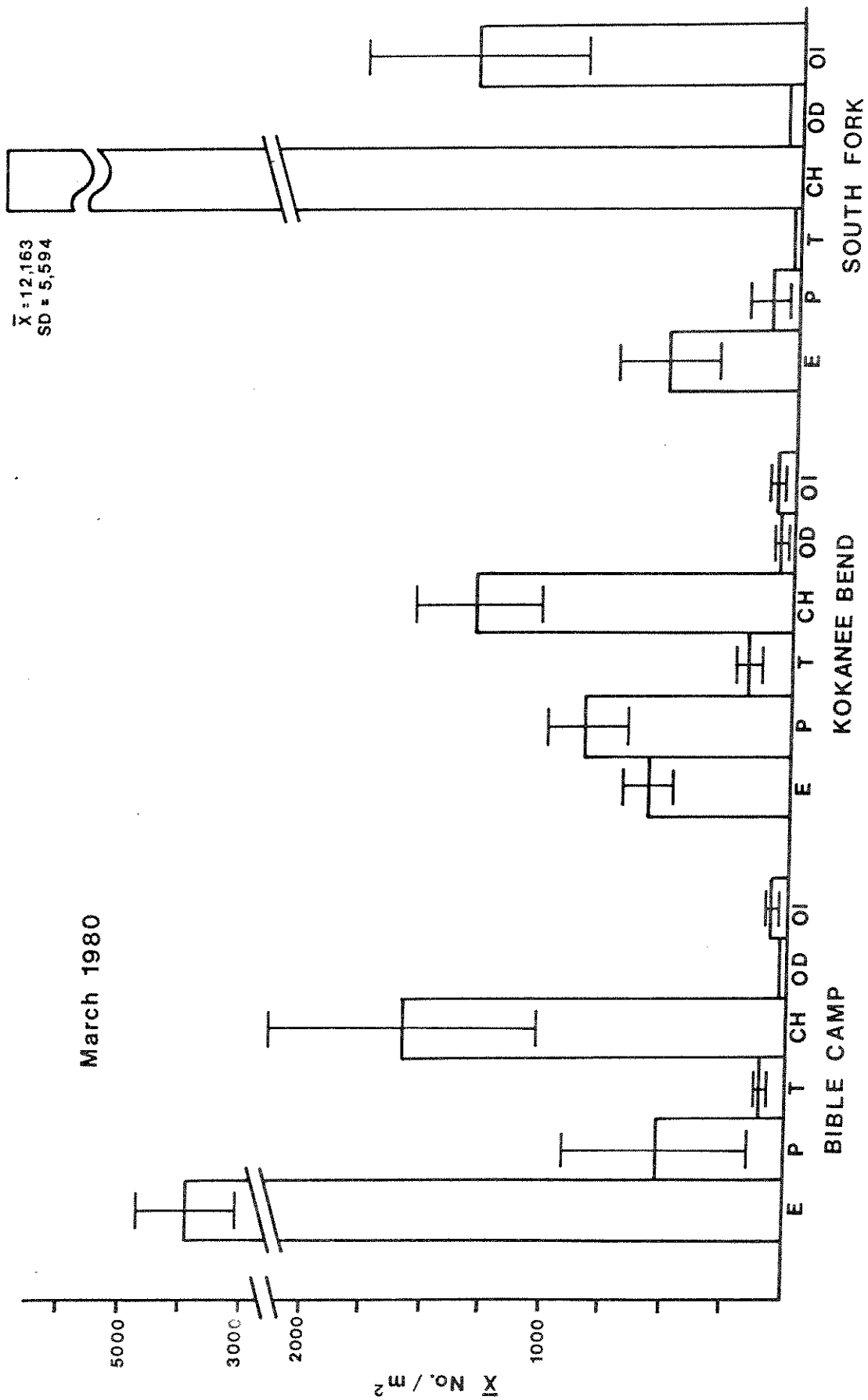
December 1979

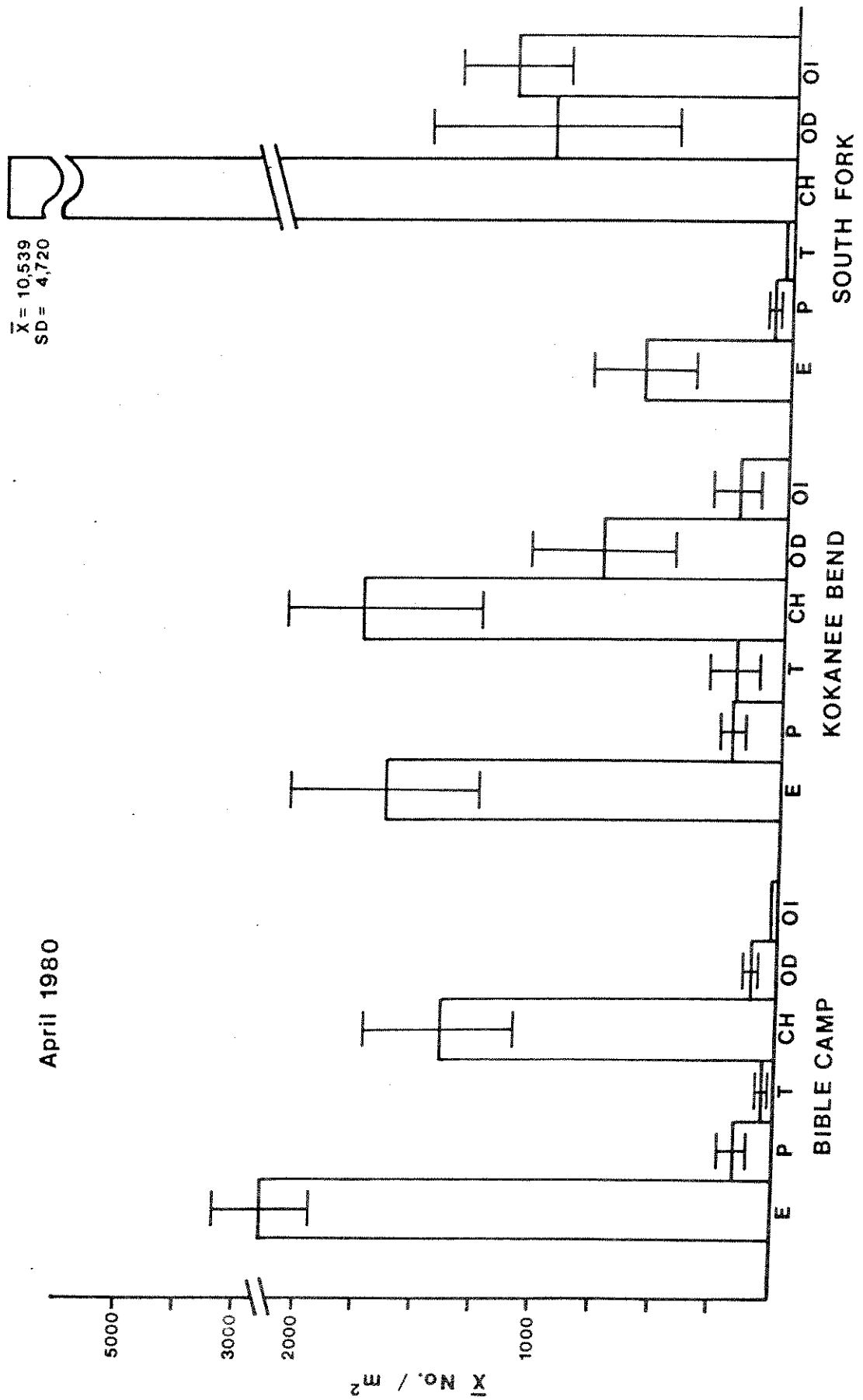
$\bar{X} = 15,170$
SD = 5,352



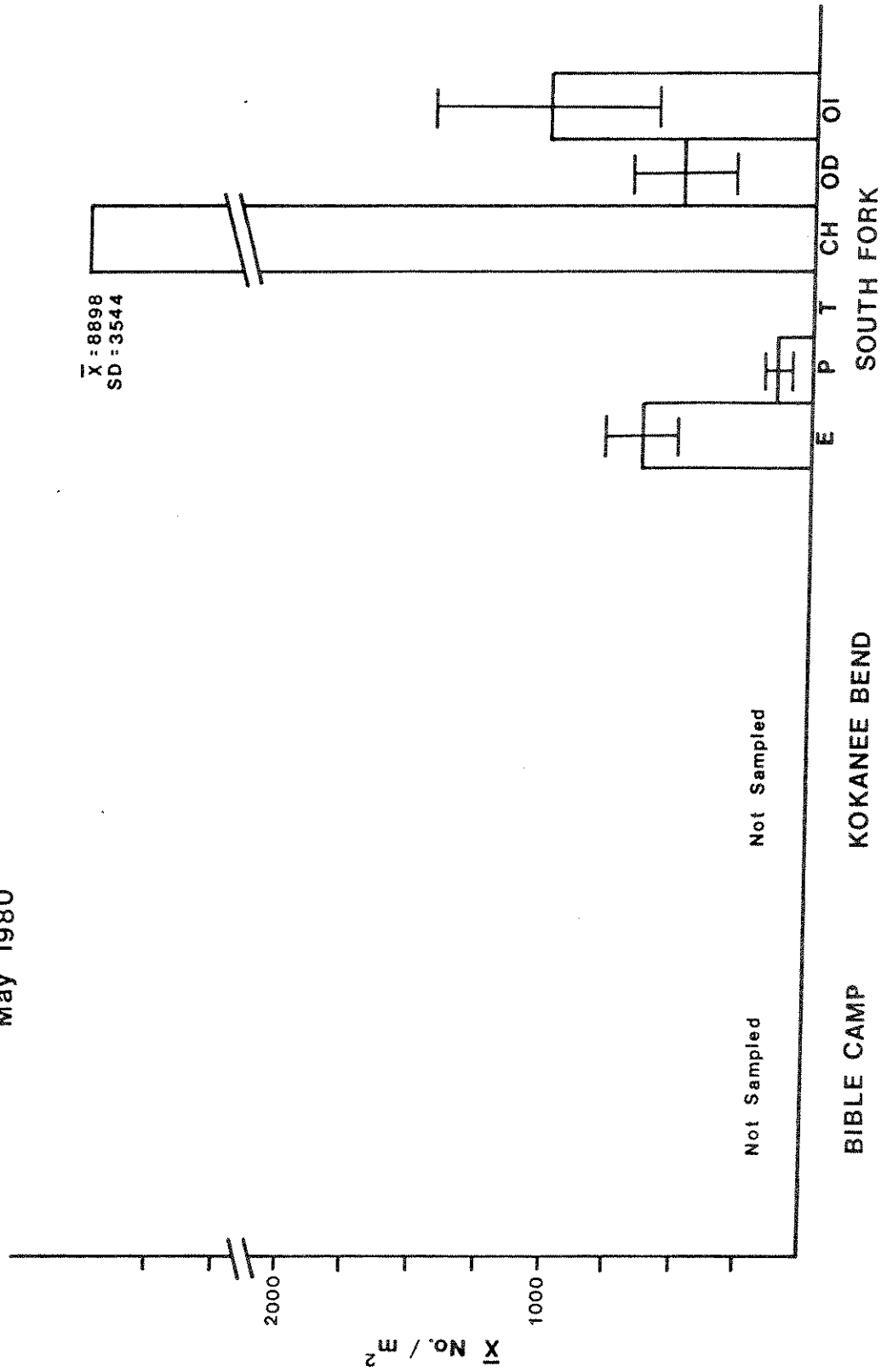


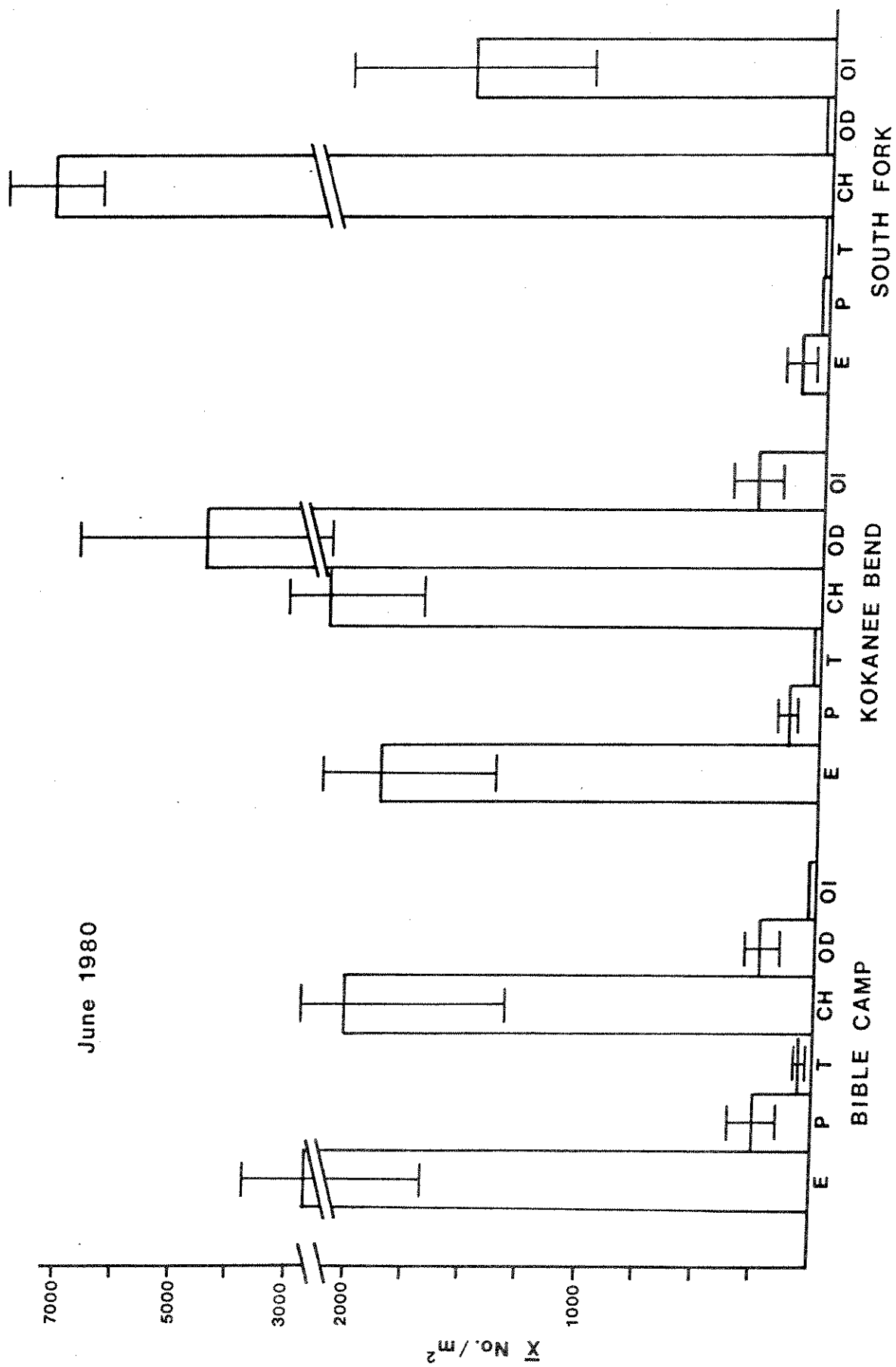


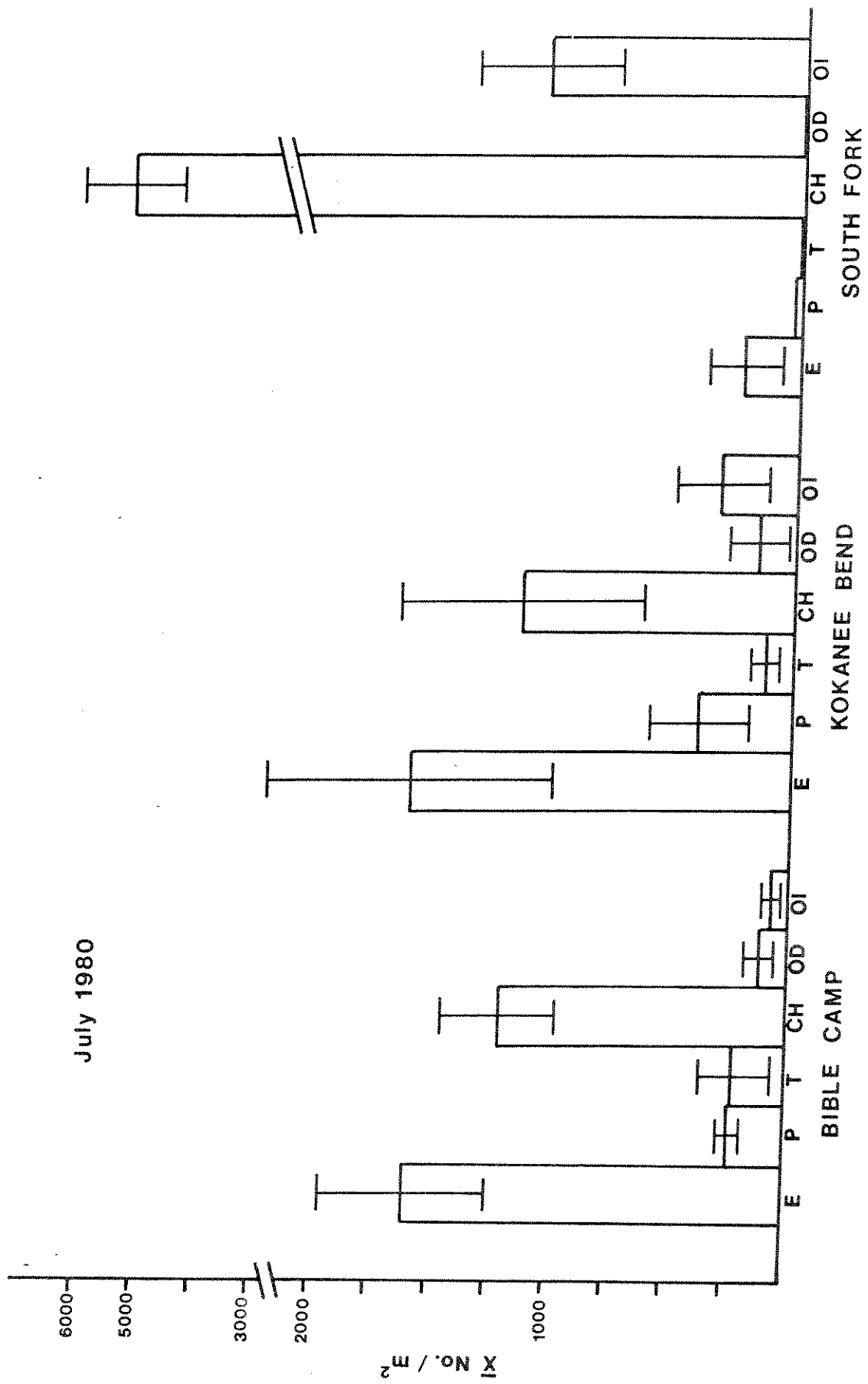


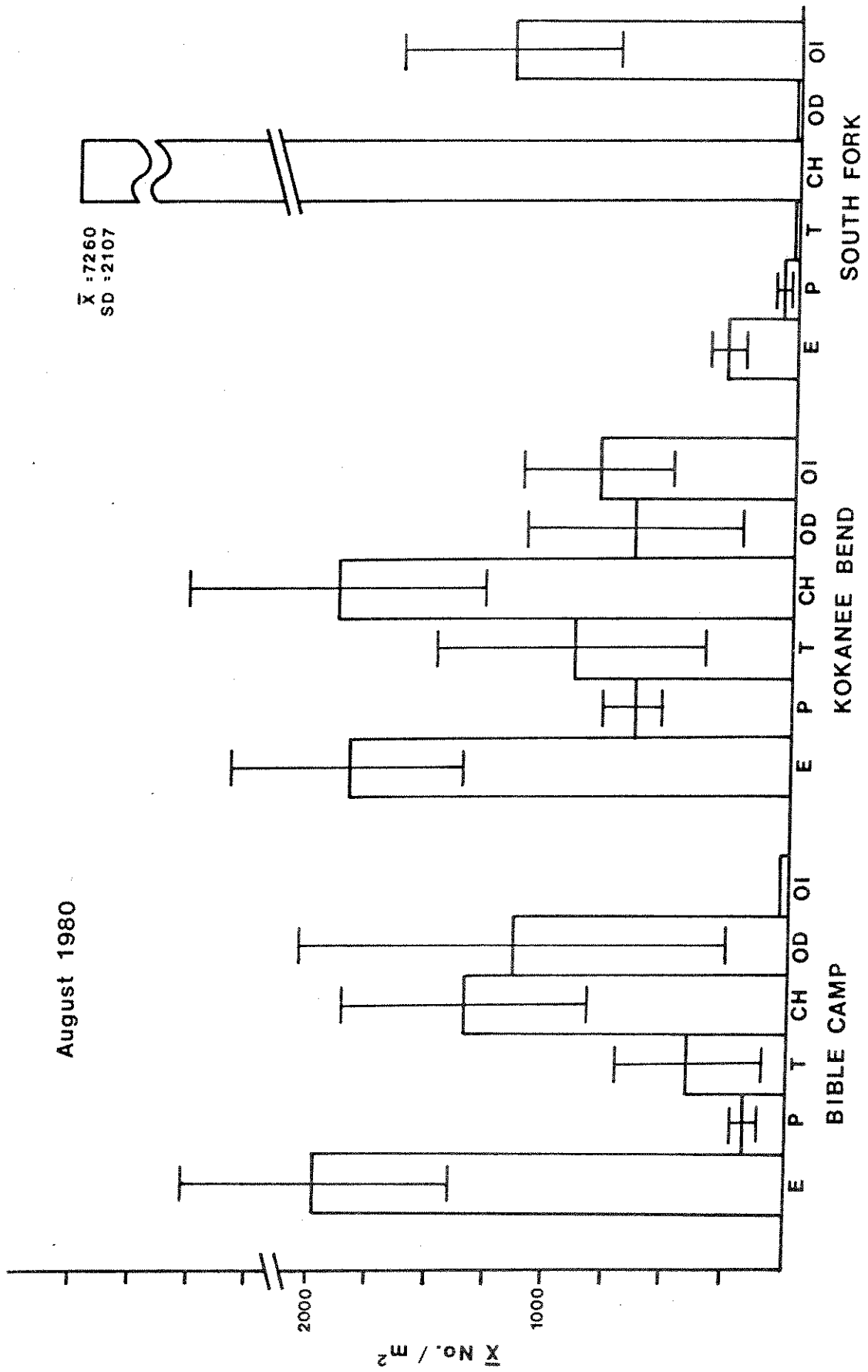


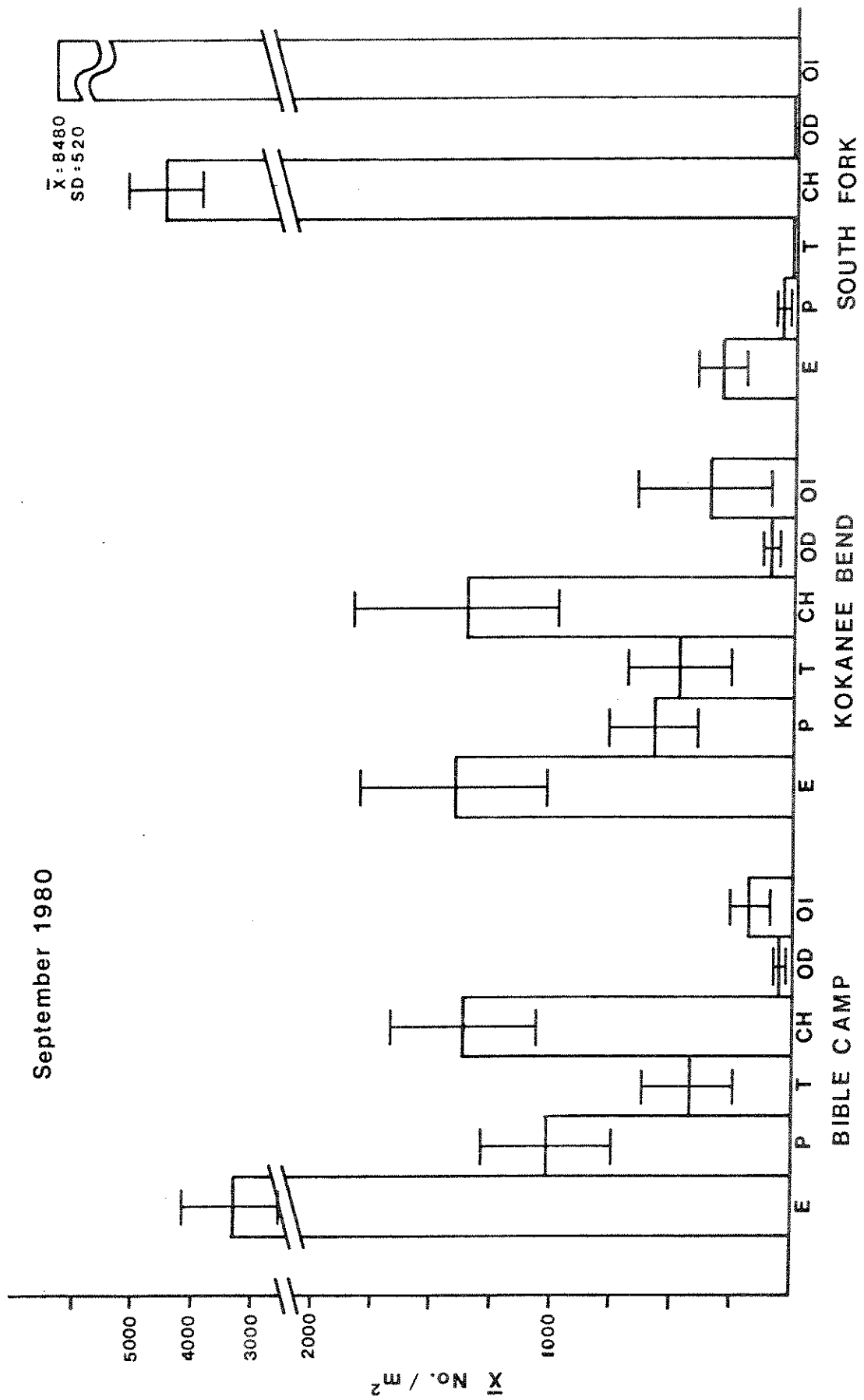
May 1980











APPENDIX C

Table:

Flathead River - Biomass Means (Kick and Circular) cc/m², October, 1979 - September, 1980.

Figures:

Biomass (cc/m²) of invertebrates as measured by volume displacement.

T = Trichoptera

P = Plecoptera

E = Ephemeroptera

C = Chironomidae

O = Other Diptera and Other Invertebrates

Bars represent monthly means (kick and circular samples combined),
I represents standard deviations.

Flathead River - Biomass Means (Kick & Circular)
cc/m²

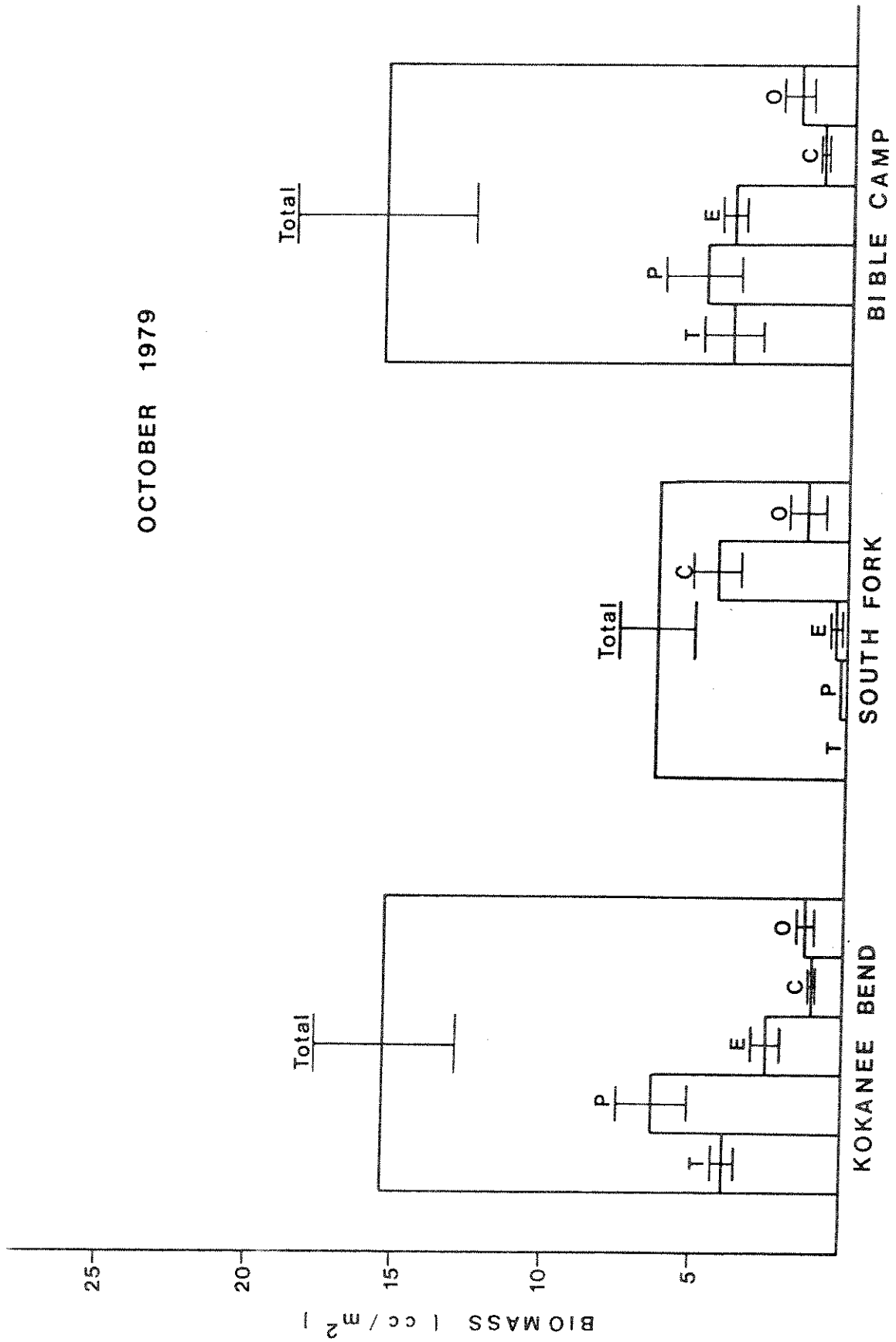
	October $\bar{x}$ (s.d.)	November $\bar{x}$ (s.d.)	December $\bar{x}$ (s.d.)	January $\bar{x}$ (s.d.)	February $\bar{x}$ (s.d.)	March $\bar{x}$ (s.d.)	April $\bar{x}$ (s.d.)
<u>Bible Camp</u>							
Ephemeroptera	4.0 (0.8)	3.5 (1.8)	3.2 (1.1)	N.T.	N.T.	5.2 (1.0)	5.6 (1.7)
Plecoptera	4.9 (2.5)	3.7 (1.7)	2.8 (1.7)			3.2 (0.8)	2.6 (1.7)
Trichoptera	4.0 (2.0)	4.0 (1.7)	1.8 (0.9)			2.1 (0.9)	1.7 (0.9)
Chironomidae	1.0 (0.1)	1.6 (-1.2)	1.2 (0.3)			1.5 (0.2)	1.5 (0.9)
Other	1.8 (0.8)	1.6 (0.6)	1.5 (0.9)			1.1 (0.0)	1.5 (0.9)
TOTAL	15.7 (6.1)	14.4 (5.7)	10.5 (2.3)			13.1 (0.8)	12.9 (3.4)
<u>Kokanee Bend</u>							
Ephemeroptera	2.6 (1.0)	3.2 (1.1)	1.8 (0.3)	2.0 (1.0)	2.3 (0.6)	2.3 (0.4)	3.3 (1.6)
Plecoptera	6.4 (2.4)	7.4 (3.0)	4.2 (1.1)	3.8 (3.1)	5.6 (2.1)	5.7 (0.5)	3.7 (0.8)
Trichoptera	4.0 (0.7)	8.9 (6.5)	2.9 (1.1)	4.4 (5.0)	2.9 (2.4)	2.8 (1.6)	4.1 (2.9)
Chironomidae	1.1 (0.1)	1.7 (0.8)	1.1 (0.2)	0.7 (0.3)	1.5 (0.0)	1.0 (0.1)	1.4 (0.7)
Other	1.3 (0.6)	1.7 (0.8)	1.0 (0.2)	0.6 (0.5)	1.1 (0.2)	0.9 (0.1)	1.3 (0.5)
TOTAL	15.4 (4.7)	22.9 (12.2)	11.0 (2.3)	11.5 (9.3)	13.4 (5.4)	12.7 (2.3)	13.8 (6.4)
<u>South Fork</u>							
Ephemeroptera	0.4 (0.2)	1.9 (0.4)	1.6 (0.1)	1.8 (0.7)	1.6 (0.2)	2.2 (0.6)	2.9 (1.7)
Plecoptera	0.2 (0.1)	0	0.1 (0.1)	1.3 (0.4)	0.7 (0.9)	0.9 (1.0)	0.5 (1.3)
Trichoptera	0	0	0	0.2 (0.4)	0.2 (0.1)	0.2 (0.1)	0.6 (0.4)
Chironomidae	5.5 (1.6)*	5.2 (1.7)	7.2 (1.8)	9.5 (3.0)	6.5 (0.1)	7.1 (2.5)	5.4 (1.6)
Other	1.4 (1.2)	2.5 (0.6)	3.3 (2.3)	4.3 (1.9)	2.3 (0.8)	3.5 (0.4)	6.5 (4.6)
TOTAL	7.5 (2.5)*	9.6 (2.6)	12.2 (4.2)	17.1 (4.9)	11.3 (1.1)	13.9 (4.7)	15.9 (7.4)

Flathead River - Biomass Means (cont.)

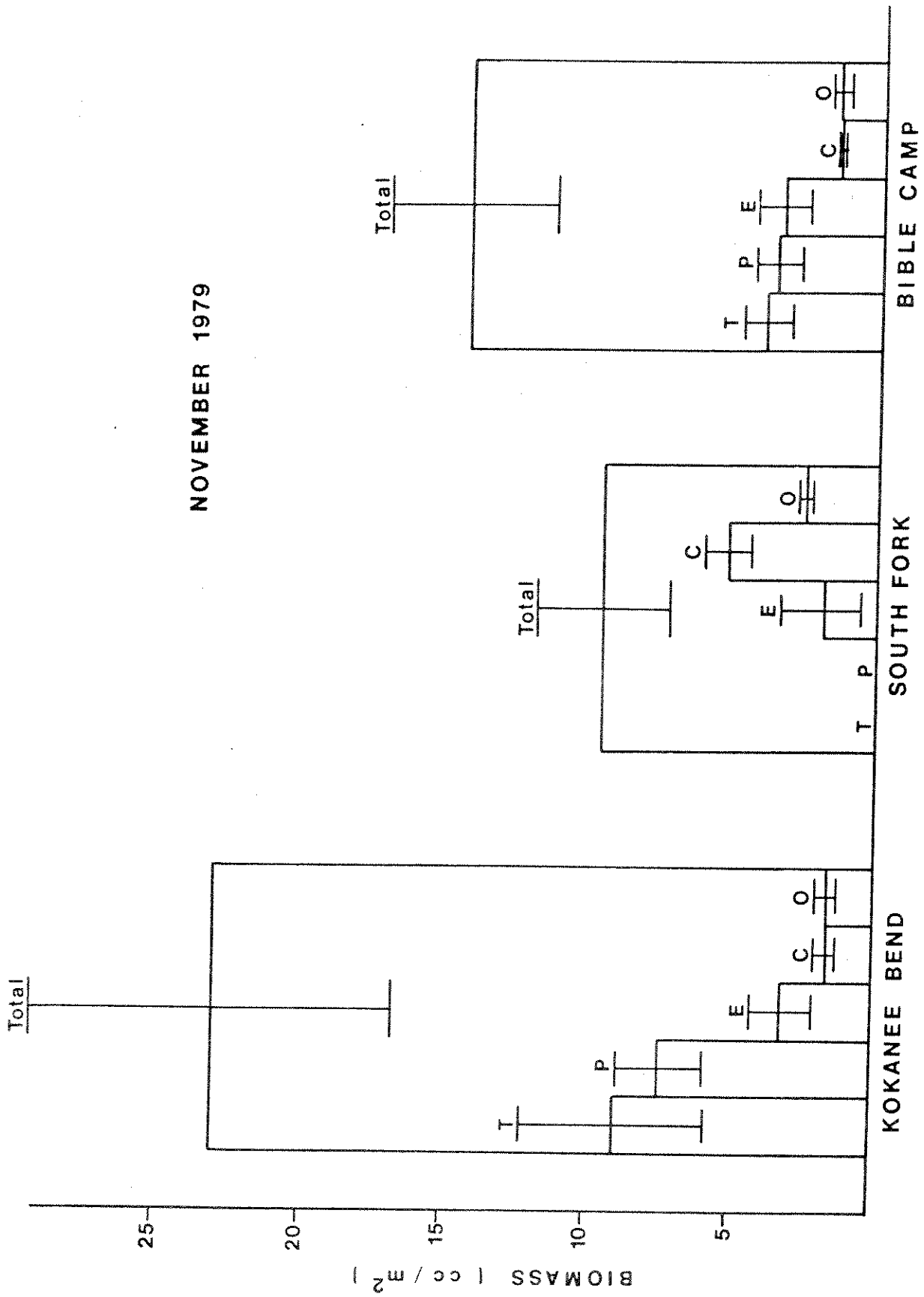
	May x (s.d.)	June x (s.d.)	July x (s.d.)	August x (s.d.)	September x (s.d.)	Mean of means x (s.d.)
<u>Bible Camp</u>						n=9
Ephemeroptera	N.T.	4.8 (1.4)	4.3 (2.2)	2.4 (0.1)	2.4 (0.6)	3.9 (1.2)*
Plecoptera		1.3 (0.3)	1.8 (1.2)	1.9 (0.5)	1.5 (0.2)	2.6 (1.2)
Trichoptera		1.3 (0.4)	2.7 (1.8)	2.3 (0.1)	2.7 (1.1)	2.5 (1.0)
Chironomidae		1.5 (0.1)	2.2 (0.6)	1.2 (0.3)	1.3 (0.1)	1.4 (0.4)*
Other		2.5 (0.8)	1.2 (0.1)	3.0 (2.3)	1.3 (0.2)	1.7 (0.6)
TOTAL		11.4 (2.8)	12.2 (5.9)	10.8 (2.0)	9.2 (0.1)	12.1 (2.1)*
<u>Kokanee Bend</u>						n=9
Ephemeroptera	N.T.	3.6 (0.1)	3.7 (2.5)	2.2 (0.6)	3.0 (1.5)	2.9 (0.7)
Plecoptera		5.3 (4.2)	3.7 (2.8)	2.9 (2.1)	4.0 (3.1)	4.8 (1.5)
Trichoptera		1.0 (0.5)	1.5 (0.9)	1.8 (1.1)	1.9 (1.0)	3.2 (2.4)
Chironomidae		1.6 (0.1)	1.4 (0.6)	1.1 (0.2)	1.3 (0.4)	1.3 (0.2)
Other		8.9 (3.4)	1.7 (1.0)	1.7 (0.9)	1.1 (0.1)	2.2 (2.5)
TOTAL		20.4 (0.1)	12.0 (7.8)	9.7 (4.8)	11.3 (5.8)	14.4 (4.5)
<u>South Fork</u>						n=11
Ephemeroptera	4.4 (1.6)*	1.4 (0.2)	2.8 (1.9)	3.2 (0.2)	1.0 (0.2)	1.9 (0.8)*
Plecoptera	1.4 (1.2)	0.6 (0.9)	0.9 (0.8)	0.9 (0.3)	1.2 (0.4)	0.7 (0.4)
Trichoptera	0.2 (0.2)	.02 (.02)	0.1 (0.1)	0.3 (0.1)	0.1 (0.1)	0.2 (0.2)
Chironomidae	7.1 (8.5)	3.0 (0.4)	4.7 (2.2)	5.4 (2.5)	5.4 (0.8)	5.9 (1.7)*
Other	6.3 (4.2)	4.2 (2.1)	4.1 (1.2)	3.9 (1.3)	3.1 (0.6)	3.6 (1.3)
TOTAL	19.4	9.2 (3.0)	12.6 (6.2)	13.7 (3.6)	10.8 (1.8)	12.3 (2.9)*

* Not included in $\bar{x}$ calculations.

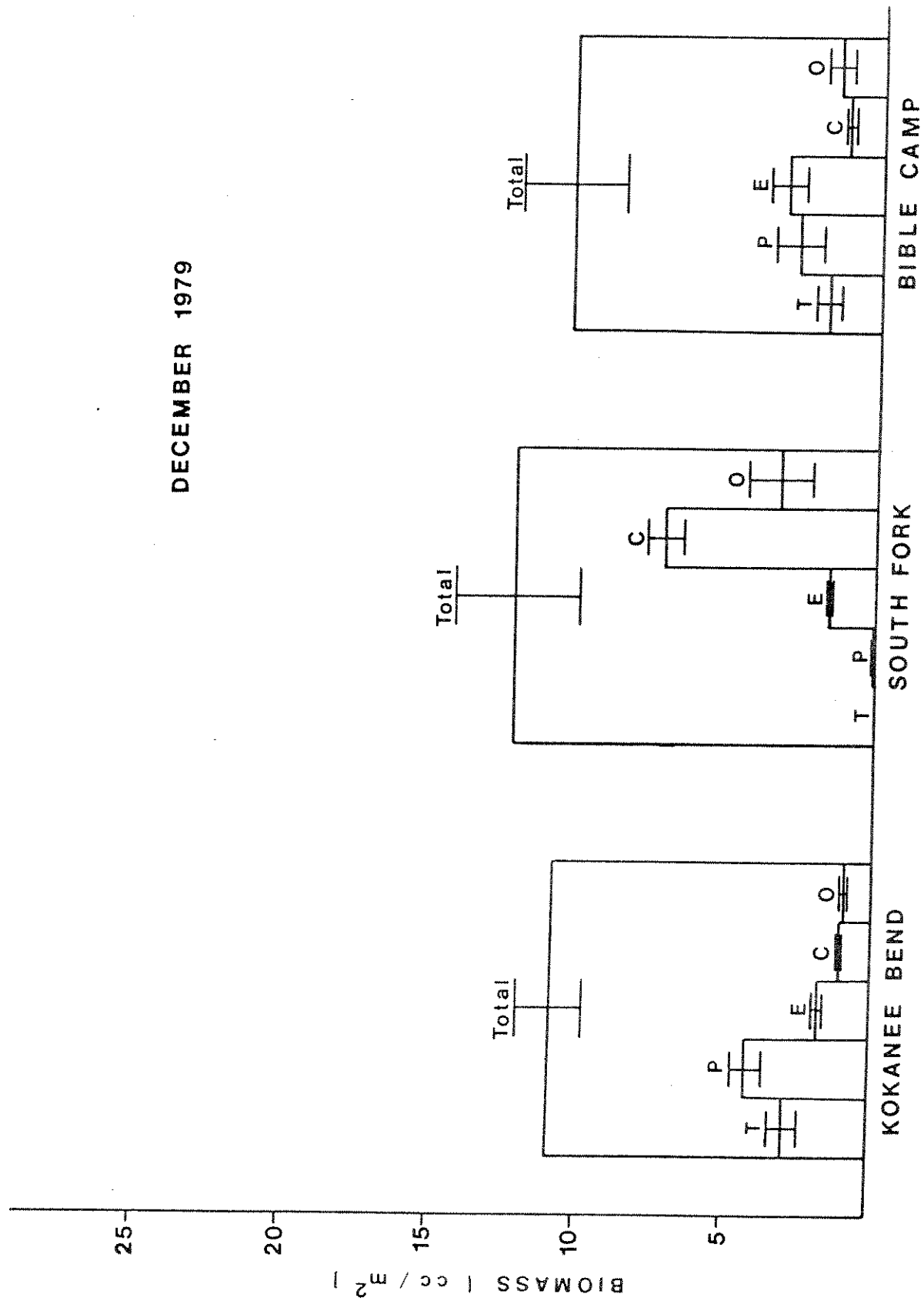
OCTOBER 1979

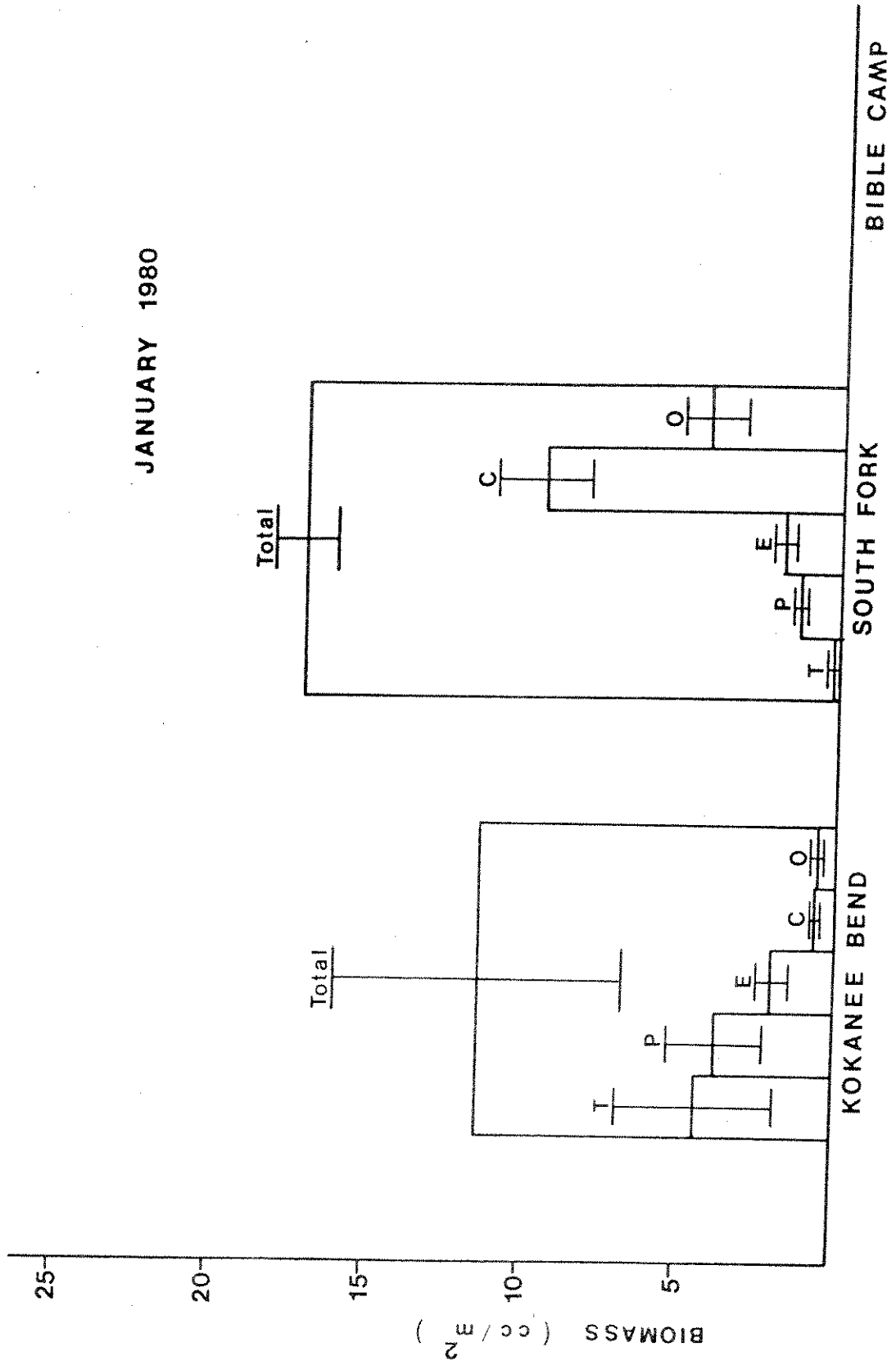


NOVEMBER 1979

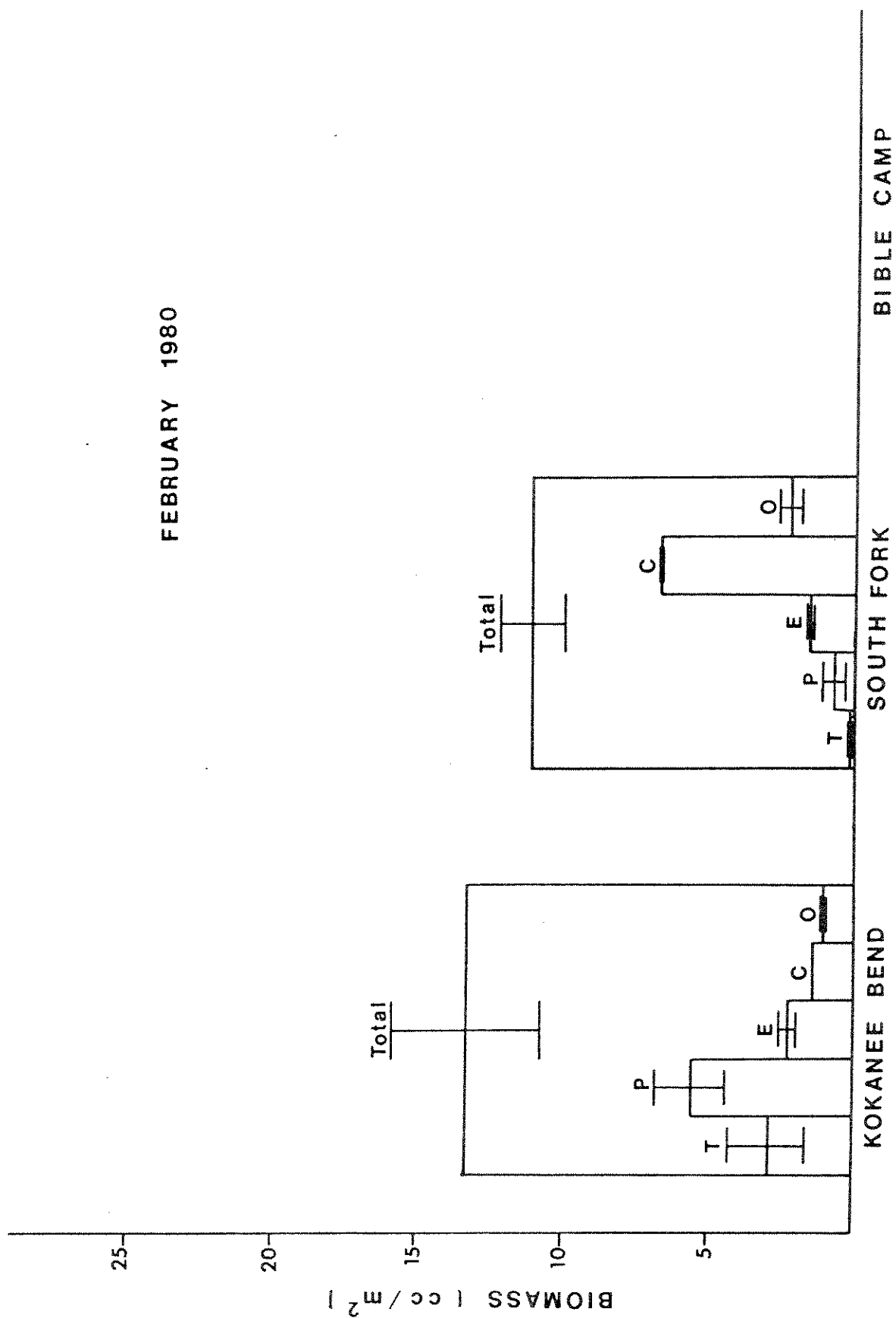


DECEMBER 1979

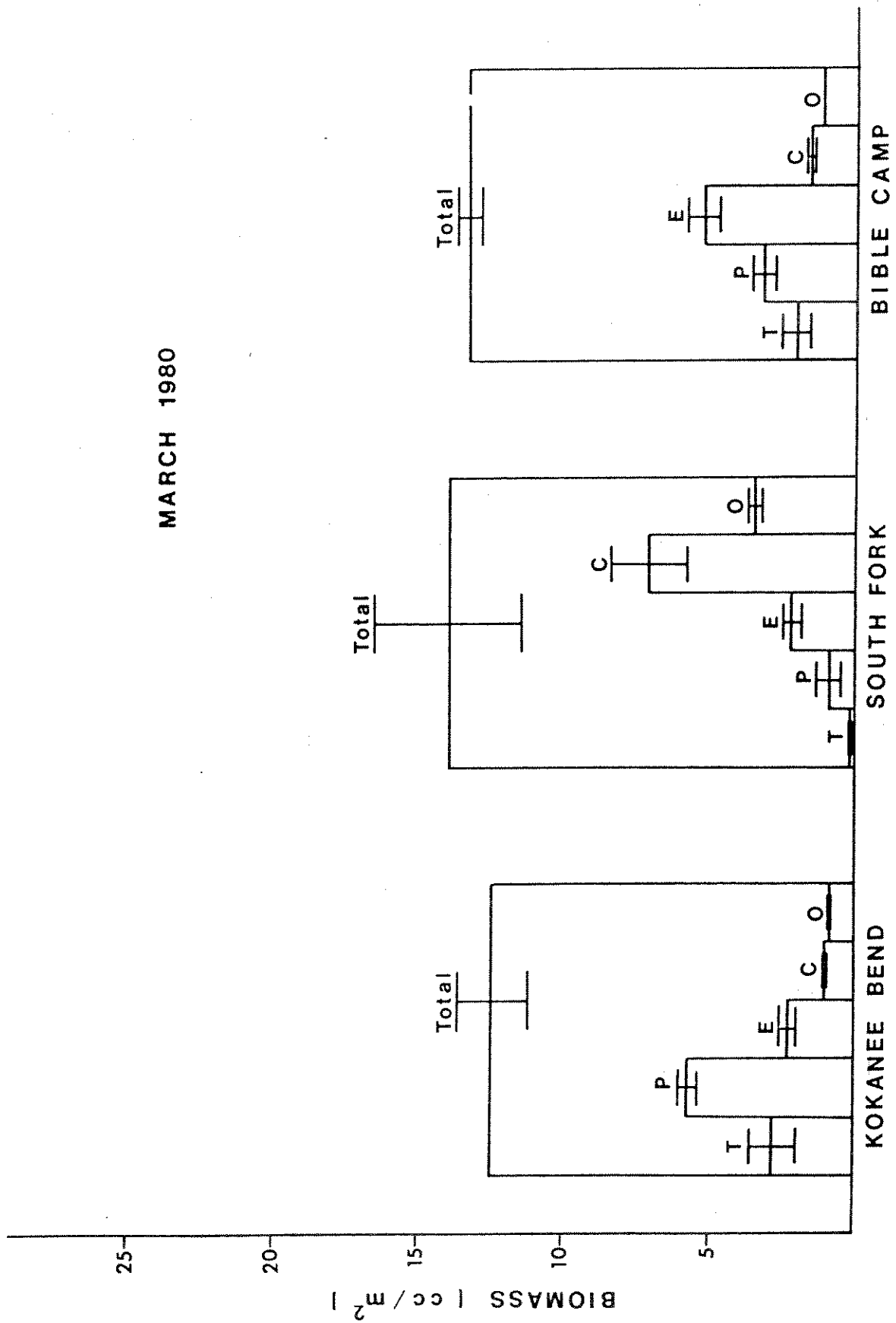




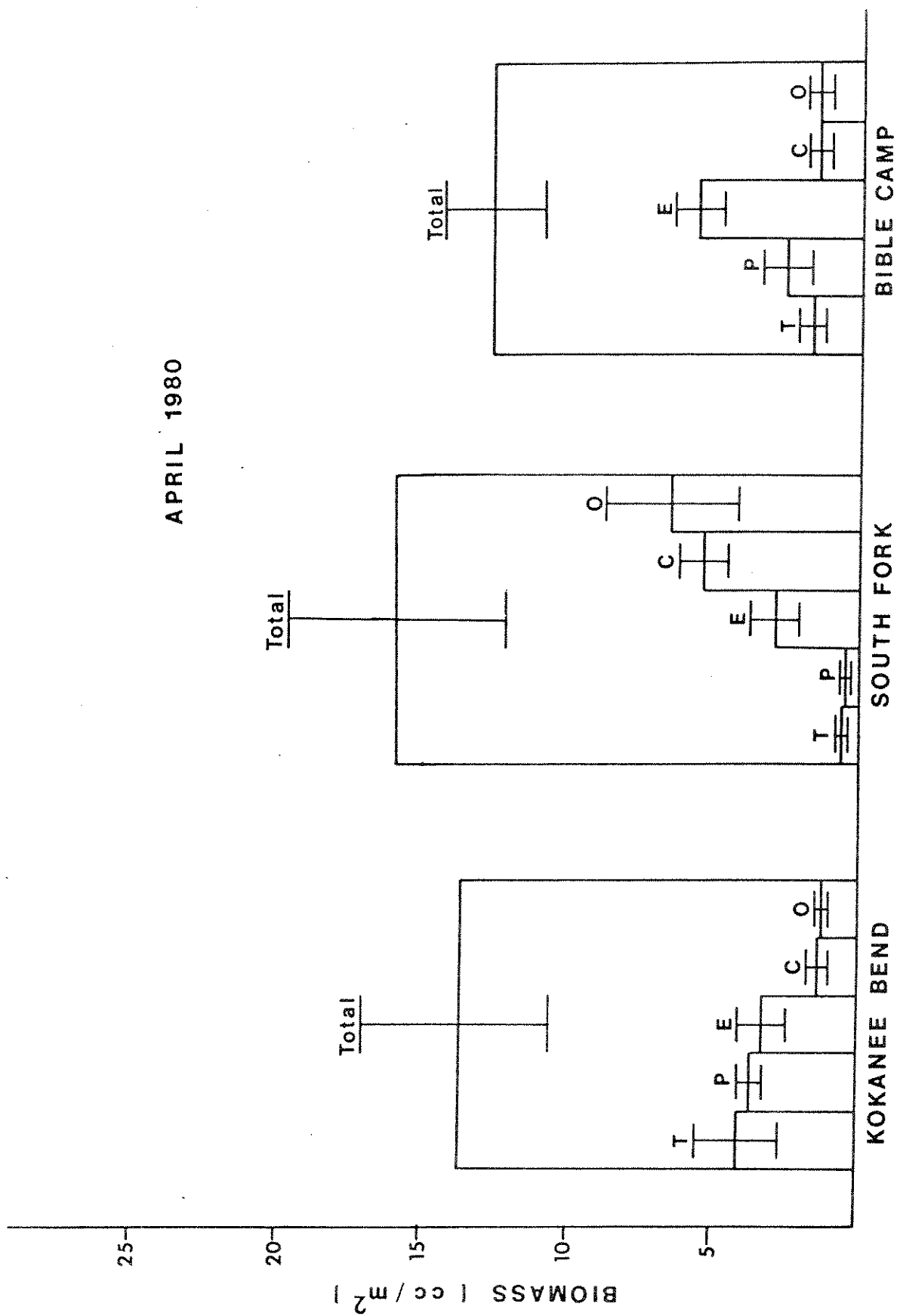
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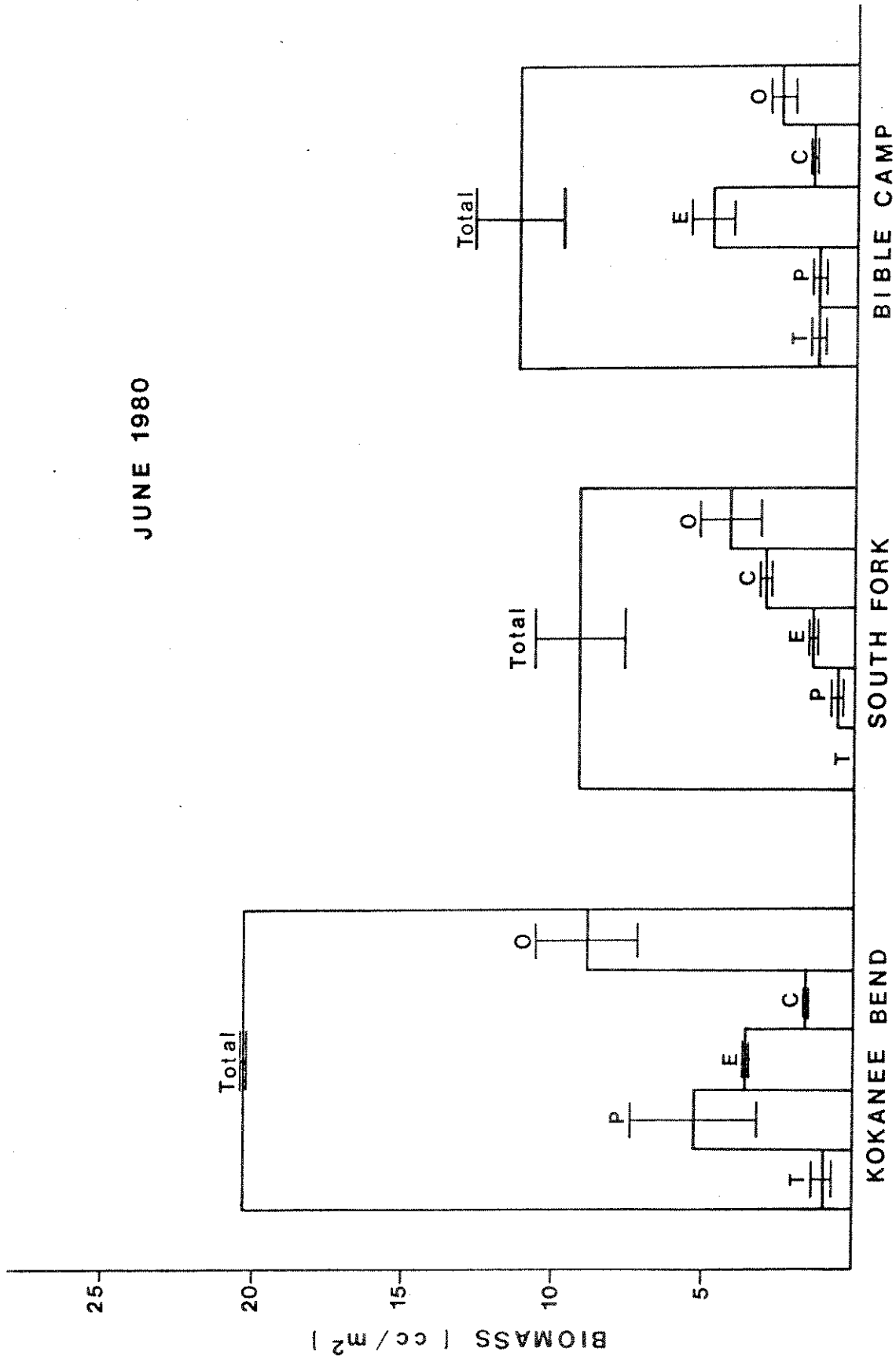
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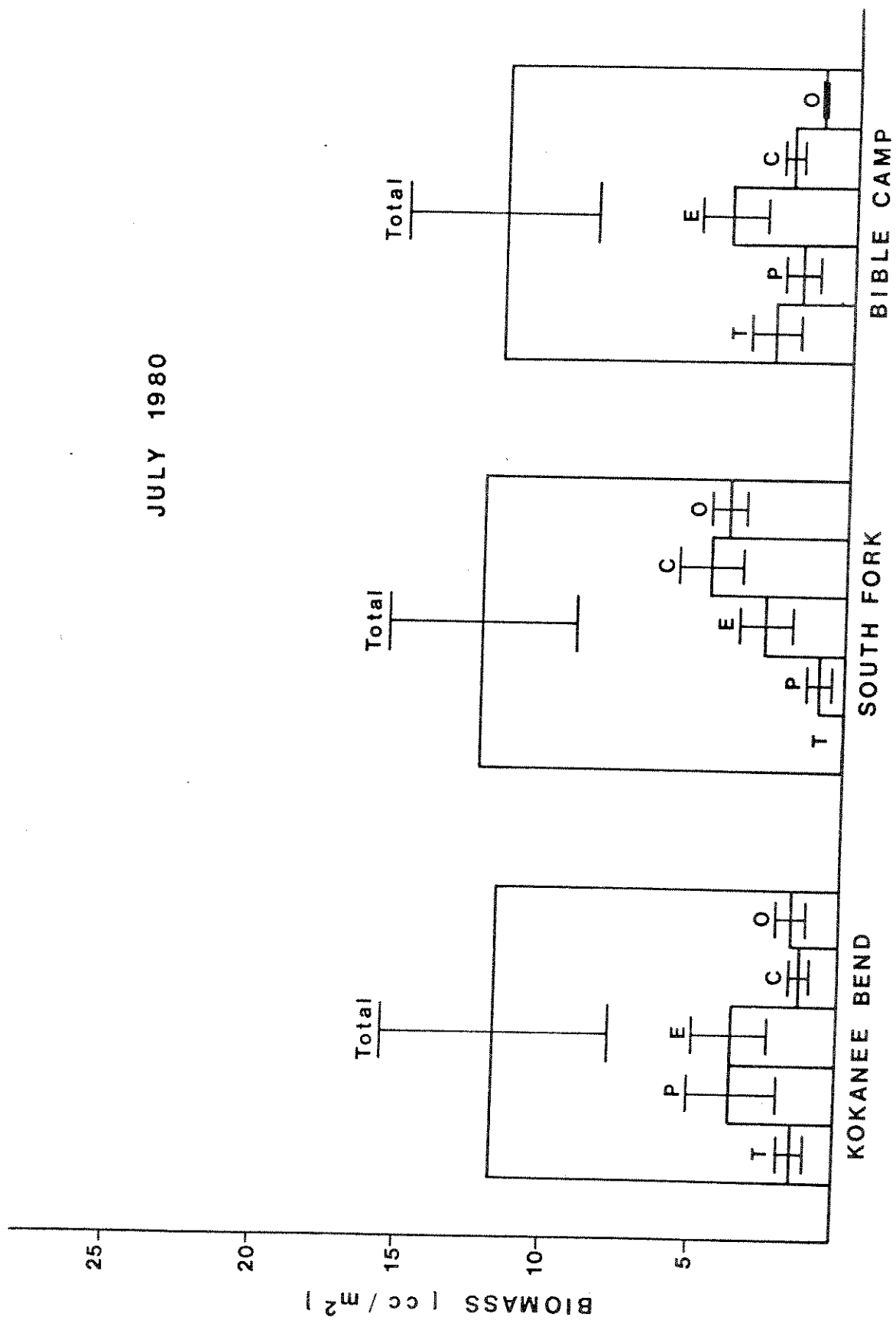
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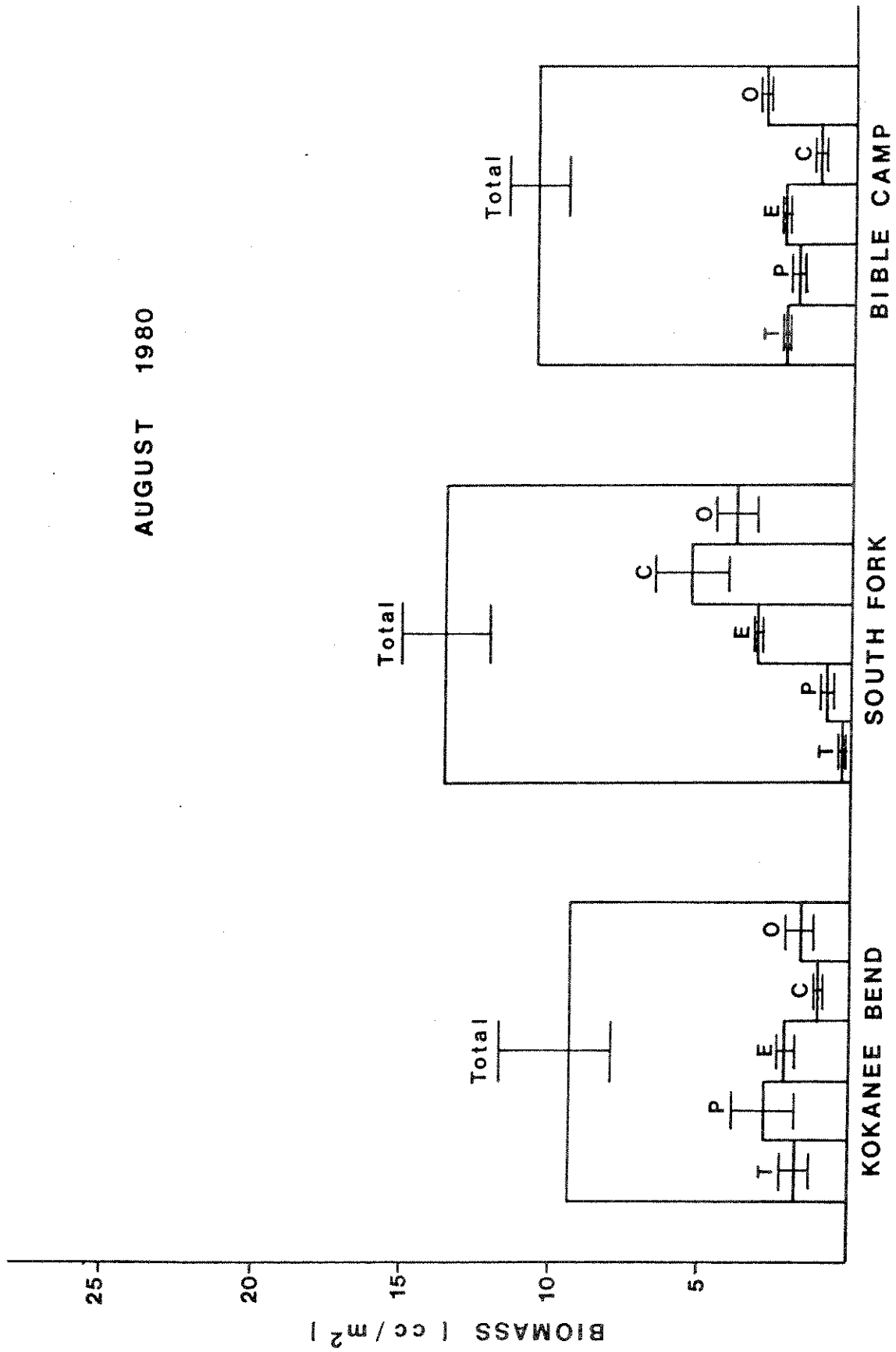
JUNE 1980



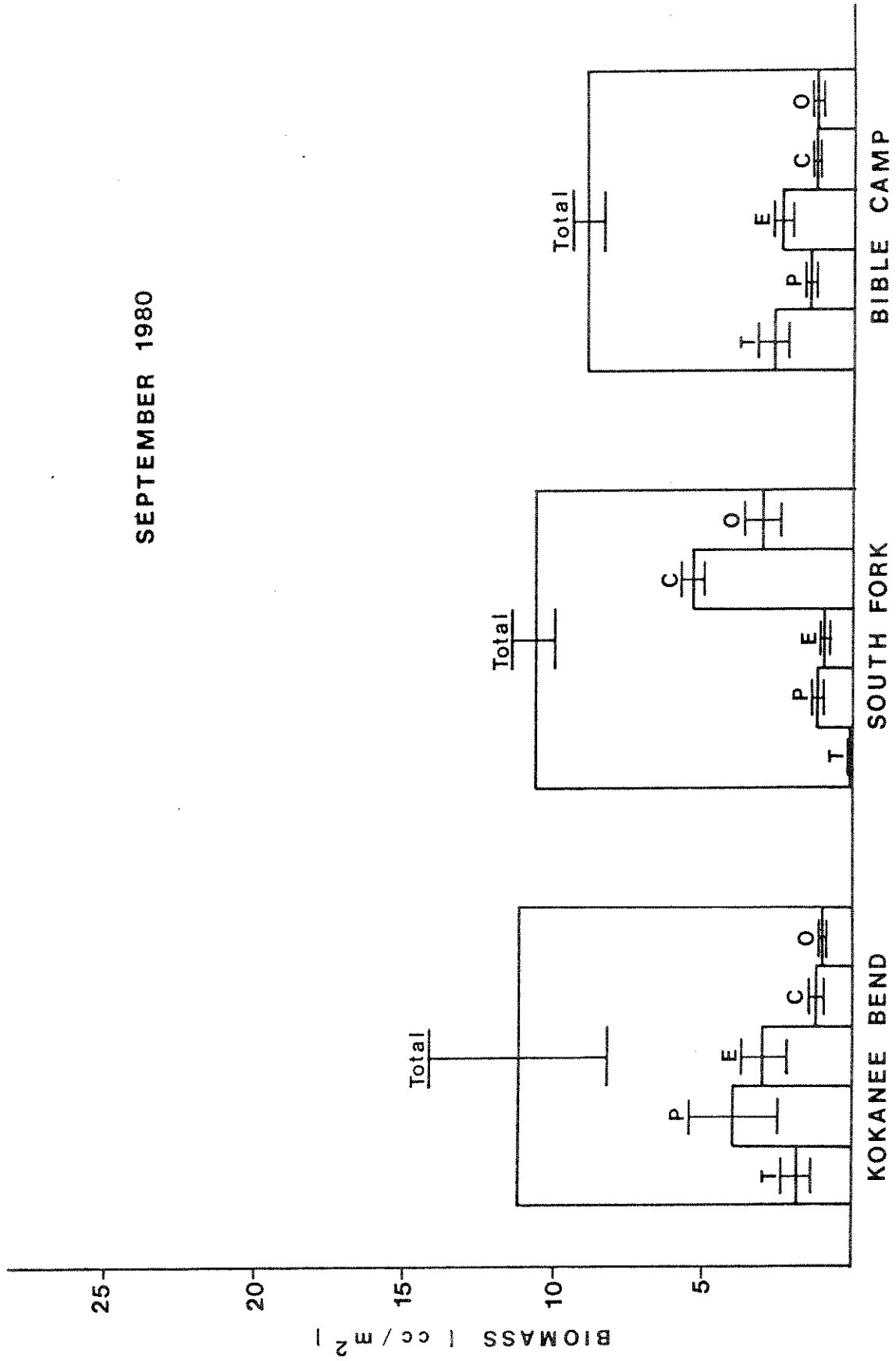
JULY 1980



AUGUST 1980



SEPTEMBER 1980



APPENDIX D

Periphyton species collected in Flathead River

Appendix D. Periphyton species collected in Flathead River.

Species	Bible Camp	South Fork	Kokanee Bend
<i>Achnanthes affinis</i> Grun.	t	t	
<i>A. deflexa</i> Reim.	0.9	t	0.8
<i>A. exilis</i> Kutz.	0.3		
<i>A. flexella</i> (Kutz.) Grun.	t	0.3	0.6
<i>A. lanceolata</i> (Breb.) Grun.	0.3		
<i>A. lanceolata</i> var. <i>dubia</i> Grun.		t	0.3
<i>A. lapponica</i> var. <i>ninckei</i> (Guerm. & Mang.) Reim.	t	t	t
<i>A. linearis</i> (W. Sm.) Grun.	1.2		4.2
<i>A. linearis</i> f. <i>curta</i> H.L. Sm.	0.9		3.6
<i>A. minutissima</i> Kutz.	52.6	23.3	58.0
<i>Amphilepura pellucida</i> Kutz.	0.3		
<i>Amphora ovalis</i> (Kutz.) Kutz.	t		
<i>A. ovalis</i> var. <i>affinis</i> (Kutz.) V.H. ex Det.	0.3		
<i>A. ovalis</i> var. <i>pediculus</i> (Kutz.) V.H.	0.3		
<i>A. perpusilla</i> (Grun.) Grun.	t		t
<i>Anomoeoneis vitrea</i> Ross	1.5	0.3	1.7
<i>Caloneis ventricosa</i> (Ehr.) Meist.	t		
<i>Cocconeis placentula</i> Ehr.	0.3		
<i>C. placentula</i> var. <i>lineata</i> (Ehr.) V. H.	0.9		t
<i>Cyclotella bodanica</i> Eulenstein		t	t
<i>C. kutzingiana</i> Thwaites	0.9	t	
<i>C. kutzingiana</i> var. <i>planetophora</i> Fricke		t	
<i>C. ocellata</i> Pantocsek	t	t	
<i>C. pseudostelligera</i> Hust.		t	
<i>Cymbella affinis</i> Kutz.		0.3	
<i>C. cesatii</i> Grun.	2.7		0.3
<i>C. cistula</i> (Ehr.) Kirchn.	t	t	
<i>Cymbella cymbiformis</i> var. <i>nonpunctata</i> Font.	t	t	
<i>C. laevis</i> Naegeli			
<i>C. microcephala</i> Grun.	0.3	0.3	7.8
<i>C. minuta</i> Hilse ex Rabh.	4.3	0.3	0.6
	0.6		

Appendix D (cont.)

Species	Percent relative abundance		
	Bible Camp	South Fork	Kokanee Bend
<i>C. prostrata</i> (Berkeley) Cl.		t	
<i>C. prostrata</i> var. <i>auerswaldii</i> (Rabh.) Reim.		t	t
<i>C. sinuata</i> Greg.	0.6		0.3
<i>C. sp. #1</i>	0.3		
<i>Denticula tenuis</i> Kutz.	t		
<i>Diatoma hiemale</i> (Rost.) Heib.	0.3		
<i>D. tenue</i> Ag.	0.6	15.1	
<i>Didymosphenia geminata</i> (Lyngb.) M. Schmidt		t	3.6
<i>Diploneis elliptica</i> (Kutz.) Cl.		t	t
<i>Eunotia</i> sp.			
<i>Fragilaria construens</i> (Ehr.) Grun.	0.6		
<i>F. construens</i> var. <i>venter</i> (Ehr.) Grun.	t	t	
<i>F. leptostauron</i> (Ehr.) Hust.	1.8		
<i>F. pinnata</i> Ehr.	0.6	t	
<i>F. vaucheriae</i> (Kutz.) Peters	t		0.3
<i>F. vaucheriae</i> var. <i>capitellata</i> (Grun.) Peters	1.5	44.0	5.6
<i>Gomphonema angustatum</i> (Kutz.) Rabh.	0.3	14.8	1.4
<i>G. intricatum</i> Kutz.	t	0.3	t
<i>G. intricatum</i> var. <i>pulvinatum</i> (Braun) Grun.	0.3		
<i>G. olivaceoides</i> Hust.	1.2	0.3	4.2
<i>G. olivaceoides</i> var. <i>densestriata</i> Foged	1.2	t	
<i>G. subclavatum</i> (Grun.) Grun.			
<i>G. ventricosum</i> Gregory	t		
<i>Hannaea arcus</i> (Ehr.) Patr.	t		
<i>Melosira destans</i> (Ehr.) Kutz.	t		0.8
<i>Navicula minima</i> Grun.		0.6	
<i>N. pupula</i> Kutz.	0.6		
<i>N. radiosa</i> Kutz.	0.3		
<i>N. radiosa</i> var. <i>tenella</i> (Breb. & Kutz.) Grun.	0.3		
<i>N. tripunctata</i> (O.F. Mull.) Bory	t	t	

Appendix D (cont.)

Species	Percent relative abundance		
	Bible Camp	South Fork	Kokanee Bend
<i>N. zanoni</i> Hust.			t
<i>Neidium</i> affine (Ehr.) Pfitz.	t		
<i>Nitzschia angustata</i> var. <i>acuta</i> Grun.			t
<i>N. dissipata</i> (Kutz.) Grun.	0.3		
<i>N. palea</i> (Kutz.) W. Sm.	0.6		
<i>N. romana</i> Grun.	t		
<i>N. sinuata</i> var. <i>tabellaria</i> V. H.	0.3		
<i>Stephanodiscus astraea</i> var. <i>minutula</i> (Kutz.) Grun.	t		t
<i>Surirella linearis</i> W. Sm.			
<i>Synedra acus</i> Kutz.	2.4		
<i>S. cyclopus</i> Brutschy		t	
<i>S. delicatissima</i> W. Sm.	3.0	t	2.0
<i>S. demerarae</i> Grun.	0.3		
<i>S. nana</i> Meist.	3.0		
<i>S. rumpens</i> Kutz.			0.3
<i>S. rumpens</i> var. <i>familiaris</i> (Kutz.) Hust.	3.0		1.1
<i>S. tenera</i> W. Sm.			0.8
<i>S. ulna</i> (Nitz.) Ehr.	6.7	t	1.4
<i>S. ulna</i> var. <i>contracta</i> Ostr.	0.3		0.3
<i>Tabellaria quadrisepa</i> Kunds.	0.6		
<i>T. sp.</i>			t

APPENDIX E

Rate of Increase Bridge Drift - Columbia Falls

	Ephemeroptera	Plecoptera	Trichoptera	Diptera	Terrestrial	Total Density	Adults Density
<u>9-16-80 145-3,400-10,000 cfs</u>							
Port 8:00-9:00 a.m.	9.2	8.1	4.6	55.0	1.1	70.7	0.8
Stbd.	8.6	0	5.2	53.0	4.2	71.9	3.9
Port 9:00-10:00 a.m.	72.6	206.6	3.0	391.8	22.2	696.2	231.8
Stbd.	(135.4)	(112.3)	(1.0)	(522.8)	(40.4)	(812.1)	(151.7)
Port 11:20-11:50 a.m.	14.4	19.1	0	117.6	14.9	167.0	26.6
Stbd.	4.0	52.0	4.5	297.2	5.6	363.8	42.9
<u>9-17-80 Control - 145 cfs</u>							
Port 8:00-9:00 a.m.	18.8	0.9	1.3	26.2	80.3	127.5	19.2
Stbd.	58.2	0	0.5	297.3	24.5	380.5	58.2
Port 9:00-10:00 a.m.	27.1	0	3.5	55.9	48.9	135.4	27.1
Stbd.	73.2	0	0.5	122.7	137.3	333.6	73.2
Port 10:00-11:00 a.m.	32.9	0	0	162.2	37.3	232.4	32.9
Stbd.	121.5	1.4	0.5	197.7	141.6	462.6	122.0
Port 11:00-12:00 noon	21.5	2.6	0.4	148.9	88.4	261.8	23.6
Stbd.	28.9	4.8	3.6	266.3	165.5	469.1	28.9
<u>9-18-80 145-10,000 cfs</u>							
Port 8:00-9:00 a.m.	1.3	1.3	10.3	37.5	29.8	80.2	2.6
Stbd.	0	1.4	0.7	43.3	51.8	102.8	2.1
Port 9:00-10:00 a.m.	19.9	120.4	2.6	143.4	464.3	751.0	124.0
Stbd.	12.5	70.8	4.2	53.8	240.3	381.9	70.5
Port 10:15-11:45 a.m.	8.1	4.4	0.3	87.1	126.9	226.9	4.4
Stbd.	6.8	1.3	0.3	64.1	52.1	124.6	1.0
Port 11:00-11:30 a.m.	13.8	5.5	2.6	177.8	80.9	283.1	5.5
Stbd.	4.7	0.6	0	121.8	71.5	200.9	0.6

APPENDIX F

Time of Shutdown Bridge Drift - Columbia Falls

	Ephemeroptera	Plecoptera	Trichoptera	Diptera	Terrestrial	Total Density	Adults Density
<u>9-23-80 Day Shutdown</u>							
Port 3:15-3:45 p.m.	168.7	6.0	0.4	319.6	707.1	1,207.5	171.5
Stbd.	111.0	14.6	0	171.7	341.7	640.2	113.0
Port 4:00-4:30 p.m.	175.1	5.5	0.5	174.1	416.9	800.0	181.1
Stbd.	79.0	3.7	0	162.1	202.7	460.7	82.6
Port 4:30-5:00 p.m.	53.8	3.8	0	297.5	353.2	712.7	57.6
Stbd.	48.0	6.0	0	265.0	330.0	661.0	54.0
Port 5:30-6:30 p.m.	31.2	0.9	0	270.2	313.3	617.9	32.1
Stbd.	22.1	2.8	0	133.6	306.5	475.7	24.9
Port 6:30-7:30 p.m.	22.5	1.7	1.2	360.7	897.7	1,286.7	25.4
Stbd.	16.0	0	0.4	173.2	246.7	437.7	16.3
<u>9-24-80 Control</u>							
Port 6:00-6:30 p.m.	8.4	0	0	25.5	53.7	89.7	6.0
Stbd.	15.2	1.2	0	80.0	94.3	194.0	16.4
Port 6:30-7:00 p.m.	23.8	7.2	0	65.7	94.9	192.1	17.4
Stbd.	34.3	16.3	3.2	79.5	358.3	494.0	23.3
Port 7:30-8:00 p.m.	16.2	6.9	0.3	43.4	134.8	202.1	8.2
Stbd.	26.8	11.2	5.3	60.8	154.6	259.0	9.4
Port 8:30-9:00 p.m.	59.4	51.2	3.0	74.6	69.7	258.1	3.4
Stbd.	56.7	46.4	2.5	77.4	48.6	232.3	6.3
Port 9:30-10:00 p.m.	37.4	66.5	3.0	86.7	47.6	244.3	7.5
Stbd.	23.9	94.4	0	36.3	49.9	205.0	2.7
Port 10:30-11:00 p.m.	22.1	25.0	0.5	31.9	32.7	114.6	2.7
Stbd.	18.2	34.8	0	58.1	54.0	165.8	3.2
<u>9-25-80 Night Shutdown</u>							
Port 8:30-9:00 p.m.	74.0	58.0	3.0	114.4	56.4	306.0	9.2
Stbd.	66.8	60.7	0.6	182.5	65.9	376.4	4.2
Port 9:45-10:15 p.m.	76.3	93.9	1.1	260.1	75.9	507.6	2.5
Stbd.	19.3	97.4	0	136.8	90.3	344.6	6.3
Port 10:30-11:00 p.m.	8.3	21.4	0.5	91.3	35.0	160.2	0
Stbd.	9.1	32.8	0.4	136.6	71.0	249.8	4.6
Port 11:30-12:30 a.m.	13.1	13.1	0.7	159.9	133.7	321.7	4.1
Stbd.	7.3	9.0	5.9	37.6	133.7	196.9	2.2
Port 12:30-1:30 a.m.	22.9	21.6	8.1	84.7	126.3	264.8	6.4
Stbd.	26.4	10.3	8.4	31.0	29.9	106.9	4.2

APPENDIX G

Means and standard deviations of the benthic samples
taken for the fish food habits study.

Appendix G. Means and standard deviations of the benthic samples (n=3)
taken for the fish food habits study.

	<u>April, 1980</u> <u>$\bar{x}$ (d)</u>	<u>July, 1980</u> <u>$\bar{x}$ (d)</u>	<u>October, 1980</u> <u>$\bar{x}$ (d)</u>
<u>Bible Camp</u>			
Ephemeroptera	1,372(392)	649(311)	1,003(566)
Plecoptera	101(55)	75(32)	359(70)
Trichoptera	31(1)	113(119)	113(14)
Diptera	504(279)	497(160)	421(109)
Other Aquatic	5(5)	12(10)	0(0)
TOTAL	<u>2,012(125)</u>	<u>1,344(543)</u>	<u>1,896(471)</u>
<u>Columbia Falls</u>			
Ephemeroptera	561(474)	1,055(225)	604(164)
Plecoptera	609(535)	311(150)	298(23)
Trichoptera	45(53)	38(5)	49(19)
Diptera	1,636(84)	901(453)	320(44)
Other Aquatic	1(2)	27(36)	50(31)
TOTAL	<u>2,852(1,865)</u>	<u>2,332(559)</u>	<u>1,321(209)</u>
<u>Kalispell</u>			
Ephemeroptera	475(228)	262(72)	603(325)
Plecoptera	109(27)	202(67)	567(321)
Trichoptera	3(1)	44(40)	12(8)
Diptera	292(212)	302(53)	434(348)
Other Aquatic	27(39)	36(8)	50(61)
TOTAL	<u>906(495)</u>	<u>846(80)</u>	<u>1,666(1,040)</u>

APPENDIX H

Invertebrate drift densities (no./100m³) at a control
(Bible Camp) and two partially regulated stations in the mainstem
Flathead River during April, July and October, 1980.
Replicate samples were taken before and after dark during each season.

April 3, 7 and 8, 1980
Flathead River
Drift densities (no./100m³)

	6-7 p.m. Shallow	6-7 p.m. Deep	7-8 Shallow	7-8 Deep	8-9 Shallow	8-9 Deep	9-10 Shallow	9-10 Deep	Density x
<u>Bible Camp</u>									
Ephemeroptera	21.60	38.87	60.80	229.64	325.15	216.77	543.75	391.37	229
Plecoptera	2.27	4.98	14.77	47.97	215.20	132.91	201.70	144.10	96
Trichoptera	1.14	---	1.14	3.91	4.68	1.27	3.41	2.24	2
Diptera	112.50	108.31	193.18	285.01	111.70	5.06	142.00	117.25	134
Other Aquatic	---	---	1.14	---	---	---	---	0.32	.2
Terrestrial	---	---	---	---	---	---	---	---	---
TOTAL	137.5	152.2	271.0	566.5	656.7	356.1	89.09	655.0	461
<u>Columbia Falls</u>									
Ephemeroptera	66.67	33.05	40.91	72.41	90.48	138.25	46.31	143.91	79
Plecoptera	25.93	8.79	1347.73	88.67	1680.0	1146.08	875.79	1190.43	796
Trichoptera	1.23	.42	---	---	---	.46	2.10	---	.5
Diptera	82.72	46.00	122.73	49.75	98.09	109.22	54.74	60.0	78
Other Aquatic	---	---	3.41	.49	9.52	---	---	---	2
Terrestrial	---	---	---	---	---	---	---	---	---
TOTAL	176.5	88.3	1514.8	211.3	1878.1	1394.0	97.89	1394.3	955
<u>Kalispell</u>									
Ephemeroptera	10.42	4.12	32.26	7.78	37.34	48.23	44.32	34.95	27
Plecoptera	12.50	2.84	27.96	8.07	139.56	180.71	160.23	130.74	83
Trichoptera	---	---	---	---	---	---	2.27	---	.3
Diptera	56.25	5.67	7.53	3.17	17.58	3.54	50.0	32.69	22
Other Aquatic	---	---	---	---	---	---	1.14	---	.1
Terrestrial	---	---	---	---	---	---	1.14	---	.1
TOTAL	179.2	12.6	67.7	19.0	194.5	232.5	259.1	198.4	133

July 21, 23 and 29, 1980
Flathead River
Drift densities (no./100m³)

	9:30-10:30 shallow No./100 m ³	9:30-10:30 deep No./100 m ³	10:30-11:30 shallow No./100 m ³	10:30-11:30 deep No./100 m ³	Density x No./100m ³
<u>Bible Camp</u>					
Ephemeroptera	94.67	138.46	261.33	665.00	290
Plecoptera	6.00	---	46.67	36.35	22
Trichoptera	19.33	24.36	54.67	62.50	40
Diptera	301.33	342.95	528.00	1,361.25	633
Other Aquatic	---	0.64	---	20.00	5
Terrestrial	1.33	4.49	4.67	---	3
TOTAL	422.7	510.9	895.3	2,145.0	993
<u>Columbia Falls</u>					
Ephemeroptera	306.92	312.28	213.28	290.12	281
Plecoptera	36.92	18.42	39.06	43.00	34
Trichoptera	30.0	48.25	82.42	93.60	64
Diptera	1,355.38	1,426.32	575.40	921.51	1,070
Other Aquatic	24.62	28.07	---	---	13
Terrestrial	135.38	239.47	23.05	36.05	108
TOTAL	1,889.2	2,072.8	933.2	1,384.3	1,570
<u>Kalispell</u>					
Ephemeroptera	43.70	38.28	257.50	144.25	121
Plecoptera	2.22	4.30	46.67	27.88	20
Trichoptera	14.81	12.11	142.50	34.96	51
Diptera	305.19	16.26	230.83	235.40	234
Other Aquatic	0.74	---	15.00	---	4
Terrestrial	10.37	---	---	.88	3
TOTAL	377.0	217.2	692.50	443.4	433

October Drift Densities
(no./100 m³)
October 6, 8 and 9, 1980

	7-8 p.m. Shallow	7-8 p.m. Deep	8-9 p.m. Shallow	8-9 p.m. Deep	Density No./100m ³
<u>Bible Camp</u>					
Ephemeroptera	missing	74.00	492.06	235.19	267
Plecoptera		34.86	85.19	70.99	64
Trichoptera		7.71	25.92	11.73	15
Diptera		265.71	279.36	195.99	247
Other Aquatic		9.14	4.76	7.41	6
Terrestrial		78.86	175.13	140.43	131
TOTAL		470.3	1,062.4	661.7	730
<u>Columbia Falls</u>					
Ephemeroptera		71.78	161.42	64.13	88
Plecoptera		55.19	69.29	49.33	63
Trichoptera		4.15	19.69	0.45	8
Diptera		3,383.00	562.20	128.25	1,668
Other Aquatic		3.32	1.57	.45	3
Terrestrial		81.32	66.93	5.38	49
TOTAL		3,598.8	881.1	247.5	1,879
<u>Kalispe11</u>					
Ephemeroptera		5.54	5.75	4.92	6
Plecoptera		5.54	23.45	20.62	17
Trichoptera		1.23	0.88	0.31	2
Diptera		54.15	137.07	68.31	82
Other Aquatic		5.23	7.08	3.69	7
Terrestrial		13.54	21.24	21.85	25
TOTAL		85.2	195.5	119.7	138

APPENDIX I

The representation of insect orders in fish stomachs by number, volume and frequency of occurrence. The relative percent composition for each is given and the Index of Relative Importance (IRI) is the mean value of the three percentages.

April
Mountain Whitefish

	Number	%	Volume	%	Frequency	%	IRI
<u>Bible Camp n=20</u>							
Ephemeroptera							
age 2 (n=6)	37	9.1	.25	23.8	4	66.7	33.2
age >2 (n=14)	139	21.4	.75	21.1	13	92.9	45.1
Plecoptera							
age 2	7	1.7	.2	19.0	4	66.7	29.1
age >2	61	9.4	.53	14.9	9	64.3	29.5
Trichoptera							
age 2	12	3.0	.3	28.6	6	100.0	43.9
age >2	158	24.3	1.58	44.4	13	92.9	53.9
Diptera							
age 2	349	86.2	.3	28.6	6	33.3	49.4
age >2	290	44.6	.6	16.9	12	85.7	49.1
Other Aquatic							
age 2	0	0	0	0	0	0	0
age >2	2	.3	.1	2.8	2	14.3	5.8
Terrestrial							
age 2	0	0	0	0	0	0	0
age >2	0	0	0	0	0	0	0
Detritus							
age 2			.25		5		
age >2			3.25		13		
<u>Columbia Falls</u>							
Ephemeroptera							
age 2 (n=11)	18	.7	.25	14.1	5	45.5	20.1
age >2 (n=15)	163	3.9	1.65	35.2	10	66.7	35.3
Plecoptera							
age 2	4	.2	.15	8.5	3	27.3	12.0
age >2	18	.4	.32	6.8	6	40.0	15.7
Trichoptera							
age 2	11	.4	.2	11.3	4	36.4	16.0
age >2	53	1.3	.6	12.8	12	80.0	31.4
Diptera							
age 2	2,523	98.7	1.12	63.3	11	18.2	60.1
age >2	3,934	94.4	2.12	45.2	13	86.7	75.4
Other Aquatic							
age 2	1	.04	.05	2.8	1	9.1	4.0
age >2	0	0	0	0	0	0	0
Terrestrial							
age 2	0	0	0	0	0	0	0
age >2	0	0	0	0	0	0	0
Detritus							
age 2			.4		7		
age >2			5.2		10		

April (continued)
Mountain Whitefish

	Number	%	Volume	%	Frequency	%	IRI
<u>Kalispell</u>							
Ephemeroptera							
age 2 (n=9)	22	7.1	.25	20.3	4	44.4	23.9
age >2 (n=16)	192	18.4	.7	10.6	12	75.0	34.7
Plecoptera							
age 2	36	11.6	.3	24.4	5	55.6	30.5
age >2	116	11.1	.75	11.4	12	75.0	32.5
Trichoptera							
age 2	4	1.3	.13	10.6	2	22.2	11.4
age >2	250	23.9	4.18	63.5	14	87.5	58.3
Diptera							
age 2	249	80.1	.55	44.7	9	100.0	74.9
age >2	482	46.1	.85	12.9	16	100.0	53.0
Other Aquatic							
age 2	0	0	0	0	0	0	0
age >2	6	.6	.1	1.5	2	12.5	4.9
Terrestrial							
age 2	0	0	0	0	0	0	0
age >2	0	0	0	0	0	0	0
Detritus							
age 2			.87		9		
age >2			7.17		16		

Westslope cutthroat

Columbia Falls n=2

Ephemeroptera	24	31.2	1.6	53.0	2	100.0	61.4
Plecoptera	28	36.4	.17	5.6	2	100.0	47.3
Trichoptera	6	7.8	.8	26.5	2	100.0	44.8
Diptera	16	20.8	.1	3.3	2	100.0	41.4
Other Aquatic	0	0	0	0	0	0	0
Terrestrial	3	3.9	.35	11.6	1	50.0	21.8
Detritus			1.2		2		

Rainbow Trout

Columbia Falls n=3

Ephemeroptera	5	6.9	.1	9.5	2	66.7	27.7
Plecoptera	9	12.5	.1	9.5	2	67.7	29.9
Trichoptera	1	1.4	.05	4.8	1	33.3	13.2
Diptera	52	72.2	.2	19.0	3	100.0	63.7
Other Aquatic	5	6.9	.6	57.1	3	100.0	54.7
Terrestrial	0		0		0		0
Detritus			.7		3		

April (continued)
Eastern Brook Trout

	Number	%	Volume	%	Frequency	%	IRI
<u>Columbia Falls n=2</u>							
Ephemeroptera	14	15.7	.1	31.3	2	100.0	49.0
Plecoptera	44	49.4	.15	46.9	2	100.0	65.4
Trichoptera	0	0	0	0	0	0	0
Diptera	31	34.8	.07	21.9	1	50.0	35.6
Other Aquatic	0	0	0	0	0	0	0
Terrestrial	0	0	0	0	0	0	0
Detritus			1.1		1		

July
Mountain Whitefish

	Number	%	Volume	%	Frequency	%	IRI
<u>Bible Camp</u>							
Ephemeroptera							
age 1&2 (n=12)	52	7.3	.7	22.2	9	75.0	35
age >2 (n=5)	38	2.1	.9	15.8	4	80.0	33
Plecoptera							
age 1 & 2	3	0.4	.15	4.8	3	25.0	10
age >2	3	0.2	.45	7.9	3	60.0	23
Trichoptera							
age 1 & 2	73	10.2	1.25	39.7	10	83.3	44
age >2	100	5.6	.85	14.9	5	10.0	10
Diptera							
age 1 & 2	562	78.5	.75	23.8	9	75.0	59
age >2	1,536	86.0	3.25	57.0	3	60.0	68
Other Aquatic							
age 1 & 2	26	3.6	.3	9.5	6	50.0	21
age >2	110	6.2	.25	4.4	2	40.0	17
Terrestrial							
age 1 & 2	0	0	0	0	0	0	0
age >2	0	0	0	0	0	0	0
Detritus							
age 1 & 2			4.5		10		
age >2			.4		4		
<u>Columbia Falls</u>							
Ephemeroptera							
age 1 & 2(n=9)	56	18.9	.75	30.0	5	55.6	34.8
age >2 (n=12)	120	21.3	2.35	43.1	9	75.0	46.5
Plecoptera							
age 1 & 2	1	.3	.05	2.0	1	11.1	4.5
age >2	51	9.0	.35	6.4	2	16.7	10.7
Trichoptera							
age 1 & 2	44	14.9	.9	36.0	5	55.6	35.5
age >2	37	6.6	1.65	30.3	9	75.0	37.3
Diptera							
age 1 & 2	189	63.9	.45	18.0	7	77.8	53.2
age >2	341	60.5	.7	12.8	8	66.7	46.7
Other Aquatic							
age 1 & 2	1	.3	.05	2.0	1	11.1	4.5
age >2	3	.5	.15	2.8	3	25.0	9.4
Terrestrial							
age 1 & 2	5	1.7	.3	12.0	4	44.4	19.4
age >2	12	2.1	.25	4.6	3	25.0	10.6

July (continued)
Mountain Whitefish

	Number	%	Volume	%	Frequency	%	IRI
<u>Columbia Falls (cont.)</u>							
Detritus							
age 1 & 2			1.2		9		
age >2			5.55		11		
<u>Kalispell</u>							
Ephemeroptera							
age 1 & 2 n=12	7	1.2	.2	8.2	3	25.0	11.5
age >2 n=12	47	6.8	1.3	29.5	10	83.3	39.9
Plecoptera							
age 1 & 2	1	0.2	.2	8.2	1	8.3	5.6
age >2	5	0.7	.25	5.7	4	33.3	13.2
Trichoptera							
age 1 & 2	60	10.6	1.3	53.1	7	58.3	40.7
age >2	93	13.4	1.7	38.6	12	100.0	50.7
Diptera							
age 1 & 2	416	73.5	.45	18.4	7	58.3	50.1
age >2	520	74.8	.9	20.5	8	66.7	54.0
Other Aquatic							
age 1 & 2	82	14.5	.3	12.0	5	41.7	22.7
age >2	29	4.2	.2	4.5	4	33.3	14.0
Terrestrial							
age 1 & 2	0	0	0	0	0	0	0
age >2	1	0.1	.05	1.1	1	8.3	3.2
Detritus							
age 1 & 2			1.2		11		
age >2			2.6		12		

Rainbow Trout

Bible Camp n=7

Ephemeroptera	1,596	78.0	8.6	71.7	7	100.0	83.2
Plecoptera	4	.2	.2	1.7	3	42.9	14.9
Trichoptera	35	1.7	1.25	10.4	7	100.0	37.4
Diptera	281	13.7	.53	4.4	6	85.7	34.6
Other Aquatic	1	.05	.05	.4	1	14.3	4.9
Terrestrial	129	6.3	1.37	11.4	7	100.0	39.2
Detritus			1.3		6		

July (continued)
Westslope Cutthroat

	Number	%	Volume	%	Frequency	%	IRI
<u>Bible Camp n=5</u>							
Ephemeroptera	502	78.7	3.3	49.6	5	100.0	76.1
Plecoptera	19	3.0	0.55	8.3	4	80.0	30.4
Trichoptera	42	6.6	1.25	18.8	5	100.0	41.8
Diptera	22	3.4	.55	8.3	5	100.0	37.2
Other Aquatic	1	.2	.05	.8	1	20.0	7.0
Terrestrial	52	8.2	.95	14.3	5	100.0	40.8
Detritus			1.5		5	100.0	
<u>Columbia Falls n=3</u>							
Ephemeroptera	27	13.2	.35	11.6	2	66.7	30.5
Plecoptera	2	1.0	.1	3.3	2	66.7	23.7
Trichoptera	27	13.2	1.05	34.8	3	100.0	49.3
Diptera	6	2.9	.07	2.3	1	33.3	12.8
Other Aquatic	1	.5	.05	1.7	1	33.3	11.8
Terrestrial	142	69.3	1.4	46.4	3	100.0	71.9
Detritus			3.4		3		
Dolly Varden							
<u>Kalispell n=5</u>							
Ephemeroptera	2	10.5	.05	.4	1	20.0	10.3
Plecoptera	3	15.8	1.4	12.4	1	20.0	16.1
Trichoptera	3	15.8	.2	1.8	2	40.0	19.2
Diptera	5	26.3	.1	.9	2	40.0	22.4
Other Aquatic	0	0	0	0	0	0	0
Fish	5	26.3	8.9	79.1	3	60.0	55.1
Terrestrial	1	5.3	.6	5.3	1	20.0	10.2
Detritus			.7		5		

October
Mountain Whitefish

	Number	%	Volume	%	Frequency	%	IRI
<u>Bible Camp n=28</u>							
Ephemeroptera							
age 1 n=10	4	1.7	.15	8.3	2	20.0	10.0
age 2 n=9	7	2.5	.3	11.8	4	44.4	19.6
age >2 n=9	93	40.1	.2	7.7	1	11.1	19.6
Plecoptera							
age 1	1	0.4	.05	2.8	1	10.0	4.4
age 2	15	5.4	.35	13.7	3	33.3	17.5
age >2	47	20.3	.9	34.6	5	55.5	36.8
Trichoptera							
age 1	35	15.0	.4	22.2	6	60.0	32.4
age 2	12	4.3	.15	5.9	2	22.2	10.8
age >2	60	25.9	.65	25.0	6	66.6	39.2
Diptera							
age 1	110	47.0	.4	22.2	7	70.0	46.4
age 2	16	5.7	.2	7.8	4	44.4	19.3
age >2	4	1.7	.1	3.8	2	22.2	9.2
Other Aquatic							
age 1	3	1.3	.25	13.9	3	30.0	15.1
age 2	1	0.4	.05	2.0	1	11.1	4.5
age >2	1	0.4	.05	1.9	1	11.1	4.5
Terrestrial							
age 1	81	34.6	.55	30.6	6	60.0	41.7
age 2	228	81.7	1.5	58.8	9	100.0	80.2
age >2	27	11.6	.7	26.9	3	33.3	23.9
Detritus							
age 1			.95		9		
age 2			.7		7		
age >2			1.8		8		

Columbia Falls

Ephemeroptera							
age 1 n=9	5	4.6	.2	16.0	4	44.4	21.7
age 2 n=12	13	4.3	.3	8.6	6	50.0	21.0
age >2 n=10	7	5.1	.2	8.0	4	40.0	17.7
Plecoptera							
age 1	0	0	0	0	0	0	0
age 2	6	2.0	.15	4.3	2	16.7	7.7
age >2	12	8.8	.4	16.0	5	50.0	24.9
Trichoptera							
age 1	12	11.0	.3	24.0	6	66.7	33.9
age 2	15	4.9	1.15	32.9	8	66.7	34.8
age >2	19	13.9	.7	28.0	5	50.0	30.6

October (continued)
Mountain Whitefish

	Number	%	Volume	%	Frequency	%	IRI
<u>Columbia Falls (cont.)</u>							
Diptera							
age 1	76	69.7	.4	32.0	7	77.8	59.8
age 2	159	52.3	.7	20.0	12	100.0	57.4
age >2	58	42.3	.45	18.0	8	80.0	46.8
Other Aquatic							
age 1	1	0.9	.05	4.0	1	11.1	5.3
age 2	2	0.7	.05	1.4	1	8.3	3.5
age >2	1	0.7	.05	2.0	1	10.0	4.2
Terrestrial							
age 1	15	13.8	.3	24.0	6	66.7	34.8
age 2	109	35.9	1.15	32.9	10	83.3	50.7
age >2	40	29.2	.7	28.0	5	50.0	35.7
Detritus							
age 1	---		.75		9		
age 2	---		2.05		12		
age >2	---		2.2		10		
<u>Kalispell n=29</u>							
Ephemeroptera							
age 1 n=10	1	.1	.05	2.6	1	10.0	4.2
age 2 n=7	0	0	0	0	0	0	0
age >2 n=12	2	2.4	.2	11.8	1	8.3	7.5
Plecoptera							
age 1	1	.1	.05	2.6	1	10.0	4.2
age 2	0	0	0	0	0	0	0
age >2	1	1.2	.05	2.9	1	8.3	4.1
Trichoptera							
age 1	665	78.4	1.0	51.3	4	40.0	56.6
age 2	31	10.4	1.2	63.2	4	57.1	43.6
age >2	31	37.3	.6	35.3	5	41.7	38.1
Diptera							
age 1	176	20.8	.7	35.9	10	100.0	52.2
age 2	260	87.2	.45	23.7	4	57.1	56.0
age >2	12	14.5	.15	8.8	2	16.7	13.3
Other Aquatic							
age 1	0	0	0	0	0	0	0
age 2	0	0	0	0	0	0	0
age >2	1	1.2	.05	2.9	1	8.3	4.1
Terrestrial							
age 1	5	.6	.15	7.7	2	20.0	9.4
age 2	7	2.3	.25	13.2	4	57.1	24.2
age >2	36	43.4	.65	38.2	6	50.0	43.9

October (continued)
Mountain whitefish

	Number	%	Volume	%	Frequency	%	IRI
<u>Kalispell (cont.)</u>							
Detritus							
age 1	---		.55		8		
age 2	---		.35		5		
age 2	---		1.65		10		
Rainbow trout							
<u>Bible Camp n=7</u>							
Ephemeroptera	22	0.7	.4	2.0	5	71.4	24.7
Plecoptera	39	1.2	1.5	7.5	6	85.7	31.5
Trichoptera	22	0.7	.4	2.0	4	57.1	19.9
Diptera	518	15.8	.8	4.0	7	100.0	39.9
Other Aquatic	0	0	0	0	0	0	0
Terrestrial	2,674	81.6	17.0	84.6	7	100.0	88.7
Detritus	---		5.1		7		
<u>Kalispell n=4</u>							
Ephemeroptera	3	2.2	.1	3.0	1	25.0	10.1
Plecoptera	1	.7	.05	1.5	1	25.0	9.1
Trichoptera	5	3.6	.45	13.4	2	50.0	22.3
Diptera	0	0	0	0	0	0	0
Other Aquatic	10	7.2	.15	4.5	2	50.0	20.6
Terrestrial	120	86.3	2.6	77.6	4	100.0	88.0
Detritus	---		1.1		4		

APPENDIX J
South Fork Chemical Analysis

South Fork Chemical Analysis
Run by the Fresh Water Research Lab,
University of Montana Biological Station

DESCRIPTION	POC	DOC	Na ⁺	K ⁺	NO ₃ ⁻	SO ₄ ⁼	Ca ⁺⁺	Mg ⁺⁺	TSS	TP	Alk.				
S. Fork 12/18/79	.103	1.978	.62	.63	.30	.36	.35	1.93	1.96	21.23	21.25	4.9	.2		
S. Fork 1/16/80	.063	1.652	.70	.72	.27	.28	.27	1.77	1.90	21.3	22.23	4.8	5.23	.2	.55
S. Fork 2/12/80	.08	1.64	1.55	.67	.36	.24	.28	1.94	1.95	22.13	5.27	5.27	.35	.3	.013
S. Fork 3/14/80	.07	1.43	.70	.36	.36	.33	.35	2.14	2.23	22.63	5.44	5.47	.55	.1	76.0
S. Fork 4/14/80	.08	1.48	1.42	.72	.36	.29	.23	2.3	24.7	24.6	5.8	5.9	.3		77.0
S. Fork 5/12/80	.06	2.01	.67	.36	.27	.22	25.2	25.0	5.9	6.2	.6				
S. Fork 6/8/80	.046	1.97	.71	106%	.31	104%	.28	4.1	22.0	22.8	6.4		.3		
S. Fork 7/14/80	.063	1.4	.64	.36	.25	.20	22.6	22.7	5.3	5.8	.8		.003		
S. Fork 8/12/80	.11	1.6	.62	.37	.17	2.3	23.7	5.1	1.4	.0019					
S. Fork 9/11/80	.046	1.4	.68	.38	.31	2.1	22.5	22.7	5.4	5.4	.5				
S. Fork 10/15/80	.053	1.25	.69	.37	.28	.28	2.0	23.8	100%	5.4	100%				
S. Fork 11/8/80	.04	1.26			.34	2.1	23.9	5.1	N/A	.0026	112%				