

**Tabla 1.** Análisis de los macroinvertebrados bentónicos recolectados mediante red de surber en el sistema fluvial del río Chillán mediante la aplicación del Índice Biótico de Familias (Hilsenhoff,1988) (25 de octubre de 1999).

A Taxa/estación	B							C Tolerancia	D						
	Est. 1	Est. 2	Est. 3	Est. 4	Est. 7	Est. 8			Est. 1	Est. 2	Est. 3	Est. 4	Est. 7	Est. 7	
Turbellaria	191	0	0	0	3	74	X 4 =		764	0	0	0	11	296	
Oligochaeta	8	6	50	1090	345479	522114	X 8 =		67	44	400	8718	2763832	4176915	
Physidae	0	0	0	3	0	0	X 8 =		0	0	0	22	0	0	
Hyalellidae	0	0	0	19	0	0	X 4 =		0	0	0	78	0	0	
Decapoda	14	0	0	0	0	0	X 6 =		83	0	0	0	0	0	
Acari	70	44	231	75	22	0	X 4 =		278	178	923	300	89	0	
Gomphidae	3	3	0	3	0	0	X 1 =		3	3	0	3	0	0	
Leptophlebiae	348	50	64	36	0	0	X 2 =		695	100	128	72	0	0	
Baetidae	28	67	1068	670	0	0	X 4 =		111	267	4270	2680	0	0	
Caenidae	3	0	8	28	0	0	X 7 =		19	0	58	195	0	0	
Gripoptergidae	36	108	306	103	0	0	X 1 =		36	108	306	103	0	0	
Perlidae	14	0	0	0	0	0	X 1 =		14	0	0	0	0	0	
Corydalidae	6	0	3	0	0	0	X 0 =		0	0	0	0	0	0	
Hydropsychidae	192	53	100	3	0	0	X 4 =		767	211	400	11	0	0	
Limnephilidae	3	0	0	0	0	0	X 4 =		11	0	0	0	0	0	
Leptoceridae	14	0	8	8	0	0	X 4 =		56	0	33	33	0	0	
Glossosomatidae	8	0	3	0	0	0	X 0 =		0	0	0	0	0	0	
Hydrobiosidae	6	0	0	0	0	0	X 2 =		11	0	0	0	0	0	
Hydroptilidae	136	11	64	83	0	0	X 4 =		545	44	256	334	0	0	
Elmidae	106	8	19	11	0	0	X 4 =		423	33	78	44	0	0	
Psephenidae	0	3	3	0	0	0	X 4 =		0	11	11	0	0	0	
Chironomidae	1662	6060	12182	15746	13188	24760	X 7 =		11637	42423	85274	110221	92318	173323	
Ceratopogonidae	28	0	3	11	0	0	X 6 =		167	0	17	67	0	0	
Athericidae	11	0	3	0	0	0	X 2 =		22	0	6	0	0	0	
Simuliidae	0	334	61	50	0	0	X 6 =		0	2002	367	300	0	0	
Empididae	19	0	14	14	22	0	X 6 =		117	0	83	83	133	0	
Ephydriidae	0	0	0	8	3	30	X 6 =		0	0	0	50	17	178	
Tipulidae	720	228	409	172	0	0	X 3 =		2160	684	1226	517	0	0	
Psychodidae	0	0	0	6	0	0	X 10 =		0	0	0	56	0	0	
Total	3624	6975	14598	18140	358717	546978			17986	46109	93836	123888	2856400	4350712	
Total de la columna D / Total de la columna B =									4.96	6.61	6.43	6.83	7.96	7.95	

E 1: Esperanza	E 2: Pinto	E 3: Esbbio	E 4: El Saque	E5: El Diablo	E 6: Hijuelas	E 7: Nebuco	E 8: Vista Bella	T1: Lluanco
T2: Pichilluanco	T3: Boyen	T4: Boyen 2	T5: Pincura	T6: Lipincura	T7 : Quilmo 1	T8: Quilmo 2	T9: El Gato	T10: Las Toscas

**Tabla 2.** Análisis de los macroinvertebrados bentónicos recolectados mediante red de surber en el sistema fluvial del río Chillán mediante la aplicación del Índice Biótico de Familias (Hilsenhoff,1988) (20 Enero de 2000).

A	B										C	D									
Estación/Taxa	Est. 1	Est. 2	Est. 3	Est. 4	Est. 6	T3	T2	T1	T7	T8	Tolerancia	Est. 1	Est. 2	Est. 3	Est. 4	Est. 6	T3	T2	T1	T7	T8
Turbellaria	78	0	0	0	0	0	33	56	0	0	X 4 =	311	0	0	0	0	0	133	222	0	0
Oligochaeta	6322	493	1722	18232	2533	333	3789	767	4588	3033	X 8 =	50573	3944	13776	145852	20265	2666	30308	6133	36707	24264
Hirudinea	0	0	0	0	11	0	0	0	0	0	X 10 =	0	0	0	0	111	0	0	0	0	0
Aegla sp.	0	6	11	0	0	22	0	11	11	0	X 6 =	0	36	67	0	0	133	0	67	67	0
Hyaella sp.	0	0	0	0	0	11	100	33	11	0	X 8 =	0	0	0	0	0	89	800	267	89	0
Acari indet.	78	74	56	378	67	22	11	78	33	22	X 4 =	311	296	222	1511	267	89	44	311	133	89
Coenagrionidae	0	0	0	0	11	0	0	0	0	0	X 9 =	0	0	0	0	100	0	0	0	0	0
Beatidae	5322	1837	1255	1489	0	522	589	2589	4277	0	X 4 =	21287	7348	5022	5955	0	2089	2355	10355	17109	0
Leptophlebiae	144	91	700	44	0	467	2278	933	1311	0	X 2 =	289	182	1400	89	0	933	4555	1866	2622	0
Caenidae indet.	0	0	0	400	0	0	0	0	0	0	X 7 =	0	0	0	2800	0	0	0	0	0	0
Gripopterygiidae	11	17	100	0	0	22	511	89	44	0	X 1 =	11	17	100	0	0	22	511	89	44	0
Diamphipnoidae	0	0	0	0	0	0	11	22	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0
Austronemuridae	22	0	0	0	0	0	0	56	0	0	X 1 =	22	0	0	0	0	0	0	56	0	0
Perlidae	0	6	0	0	0	0	0	0	0	0	X 1 =	0	6	0	0	0	0	0	0	0	0
Corydalidae	0	0	89	0	0	56	78	1111	389	0	X 0 =	0	0	0	0	0	0	0	0	0	0
Hydropsychidae	9777	1945	1822	1289	22	744	600	2766	2966	0	X 4 =	39107	7780	7288	5155	89	2977	2400	11066	11865	0
Hydrobiosidae	56	0	0	0	0	0	78	22	11	0	X 2 =	111	0	0	0	0	0	156	44	22	0
Leptoceridae	0	0	11	11	0	0	78	11	0	0	X 4 =	0	0	44	44	0	0	311	44	0	0
Hydroptilidae	0	34	0	1555	0	0	0	0	0	0	X 4 =	0	136	0	6222	0	0	0	0	0	0
Glossosomatidae	33	11	0	0	0	0	0	0	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0
Limnephilidae	11	0	0	0	0	0	0	0	0	0	X 4 =	44	0	0	0	0	0	0	0	0	0
Psephenidae	0	0	0	0	0	0	0	11	0	0	X 4 =	0	0	0	0	0	0	0	44	0	0
Elmidae	356	96	178	22	0	0	0	0	44	0	X 4 =	1422	384	711	89	0	0	0	0	178	0
Empididae	89	0	44	56	0	0	0	11	0	0	X 6 =	533	0	267	333	0	0	0	67	0	0
Athericidae	100	0	0	0	0	0	22	67	0	0	X 2 =	200	0	0	0	0	0	44	133	0	0
Blephariceridae	56	0	0	0	0	0	0	0	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0
Ceratopogonidae	33	11	44	378	0	0	0	0	33	0	X 6 =	200	67	267	2266	0	0	0	0	200	0
Chironomidae	13699	6011	10999	36307	2189	678	1733	1333	3811	533	X 7 =	95890	42077	76992	254152	15321	4744	12132	9332	26675	3733
Tipulidae	67	17	44	22	0	11	11	0	0	0	X 3 =	200	51	133	67	0	33	33	0	0	0
Simuliidae	411	408	33	0	0	0	78	11	56	0	X 6 =	2466	2448	200	0	0	0	467	67	333	0
Pyrilidae	0	0	11	0	0	0	0	0	0	0	X 5 =	0	0	56	0	0	0	0	0	0	0
Total	36663	11057	17121	60183	4833	2889	9999	9977	17587	3589		212979	64772	106545	424535	36152	13776	54250	40163	96046	28086
IBF= Total de la columna D/Total de la columna B =												5.81	5.86	6.22	7.05	7.48	4.77	5.43	4.03	5.46	7.83

**Tabla 3.** Análisis de los macroinvertebrados bentónicos recolectados mediante red de surber en el sistema fluvial del río Chillán mediante la aplicación del Índice Biótico de Familias (Hilsenhoff,1988) (13 Noviembre de 2000).

A	B												C	D											
Taxa/Estaciones	E1	E2	E3	E4	E8	T1	T2	T4	T5	T6	T7	T9	Tolerancia	E1	E2	E3	E4	E8	T1	T2	T4	T5	T6	T7	T9
Acari	0	0	96	0	45	0	6	0	6	0	0	11	X 4 =	0	0	386	0	181	0	23	0	23	0	0	45
Amelotopsidae	6	0	0	0	0	0	0	0	0	0	0	0	X 2 =	11	0	0	0	0	0	0	0	0	0	0	0
Amnicolidae	0	0	0	0	0	0	0	0	11	17	28	23	X 6 =	0	0	0	0	0	0	0	68	102	170	136	0
Athericidae	6	0	0	0	0	0	0	0	0	0	6	0	X 2 =	11	0	0	0	0	0	0	0	0	11	0	0
Baetidae	11	193	1179	96	0	210	0	176	6	386	96	79	X 4 =	45	771	4717	386	0	839	0	703	23	1542	386	318
Caenide	0	0	0	0	0	0	0	0	0	0	0	0	X 7 =	0	0	0	0	0	0	0	0	0	0	0	0
Ceratopogonidae	0	0	0	0	0	0	0	0	0	0	0	0	X 6 =	0	0	0	0	0	0	0	0	0	0	0	0
Chiliniidae	0	0	0	0	0	0	0	0	17	0	0	17	X 6 =	0	0	0	0	0	0	0	102	0	0	102	0
Chironomidae	703	5216	11782	14872	9934	346	754	284	1247	284	159	14300	X 7 =	4922	36515	82476	104107	69537	2421	5279	1985	8732	1985	1111	100098
Coenagrionidae	0	0	0	0	0	0	0	0	0	0	0	0	X 9 =	0	0	0	0	0	0	0	0	0	0	0	0
Corydalidae	0	0	0	0	0	6	23	11	0	6	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0
Decapoda	0	6	6	0	0	0	6	11	0	0	0	0	X 6 =	0	34	34	0	0	0	34	68	0	0	0	0
Elmidae	6	96	40	11	0	34	6	108	0	0	11	0	X 4 =	23	386	159	45	0	136	23	431	0	0	45	0
Empididae	0	0	6	28	0	28	0	0	0	0	0	34	X 6 =	0	0	34	170	0	170	0	0	0	0	0	204
Glossosomatidae	0	0	6	0	0	0	0	0	0	0	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0
Gripopterygidae	6	6	119	147	0	23	130	295	6	550	0	17	X 1 =	6	6	119	147	0	23	130	295	6	550	0	17
Hyalellidae	0	0	0	0	0	11	0	0	0	45	6	51	X 8 =	0	0	0	0	0	91	0	0	0	363	45	408
Hydrobiosidae	0	0	0	0	0	23	6	0	0	0	0	0	X 2 =	0	0	0	0	0	45	11	0	0	0	0	0
Hydropsychidae	11	28	227	51	91	23	28	102	0	0	28	3266	X 4 =	45	113	907	204	363	91	113	408	0	0	113	13064
Hydroptilidae	102	0	11	17	0	0	0	0	0	0	0	176	X 4 =	408	0	45	68	0	0	0	0	0	0	0	703
Leptoceridae	0	0	0	0	0	6	0	0	0	0	0	0	X 4 =	0	0	0	0	0	23	0	0	0	0	0	0
Leptophlebiidae	91	159	34	40	0	176	147	482	0	130	726	108	X 2 =	181	318	68	79	0	352	295	964	0	261	1452	215
Notonemouridae	0	0	0	11	0	6	0	0	0	11	23	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0
Oligochaeta	40	0	386	147	267794	34	51	68	40	522	227	0	X 8 =	318	0	3084	1179	2142353	272	408	544	318	4173	1814	0
Oniscigastridae	0	0	0	0	0	0	0	6	0	0	0	0	X 3 =	0	0	0	0	0	0	17	0	0	0	0	0
Physidae	0	0	0	0	0	0	0	0	0	0	0	11	X 8 =	0	0	0	0	0	0	0	0	0	0	0	91
Platyhelminthes	0	0	0	0	91	0	0	0	0	0	0	0	X 4 =	0	0	0	0	363	0	0	0	0	0	0	0
Psephenidae	0	0	0	0	0	0	17	6	0	0	6	0	X 4 =	0	0	0	0	0	0	68	23	0	0	23	0
Psychodidae	0	0	0	0	0	0	0	0	0	0	0	0	X 10 =	0	0	0	0	0	0	0	0	0	0	0	0
Pyrilidae	0	0	0	0	0	0	0	0	6	0	0	0	X 5 =	0	0	0	0	0	0	0	0	28	0	0	0
Sericostomatidae	0	0	0	0	0	0	0	0	0	0	0	0	X 3 =	0	0	0	0	0	0	0	0	0	0	0	0
Simuliidae	0	11	6	17	0	34	34	0	6	539	0	11	X 6 =	0	68	34	102	0	204	204	0	34	3232	0	68
Tipulidae	79	233	369	102	0	0	23	34	0	0	0	6	X 3 =	238	680	1106	306	0	0	68	102	0	0	0	17
Total	1060	5948	14266	15541	277955	958	1230	1610	1332	2506	1321	18070		6209	38908	93169	106794	2212797	4666	6657	5710	9265	12287	5228	115248

IBF= Total de la columna D/Total de la columna B = 5,86 6,54 6,53 6,87 7,96 4,87 5,41 3,55 6,95 4,90 3,96 6,38

E 1: Esperanza	E 2: Pinto	E 3: Esbbio	E 4: El Saque	E5: El Diablo	E 6: Hijuelas	E 7: Nebuco	E 8: Vista Bella	T1: Lluanco
T2: Pichilluanco	T3: Boyen	T4: Boyen 2	T5: Pincura	T6: Lipincura	T7 : Quilmo 1	T8: Quilmo 2	T9: El Gato	T10: Las Toscas

**Tabla 4.** Análisis de los macroinvertebrados bentónicos recolectados mediante red de surber en el sistema fluvial del río Chillán mediante la aplicación del Índice Biótico de Familias (Hilsenhoff,1988) (22 enero de 2001).

A	B													C	D												
	E1	E2	E3	E4	E5	E6	T1	T2	T3	T4	T5	T7	T9	Tolerancia	E1	E2	E3	E4	E5	E6	T1	T2	T3	T4	T5	T7	T9
Acari	566	67	128	11	0	39	3	8	100	6	128	72	239	X 4 =	2264	267	512	44	0	155	11	33	400	22	512	289	955
Aeglidae	7	11	0	0	6	0	0	0	0	11	0	6	0	X 6 =	44	67	0	0	33	0	0	0	0	67	0	33	0
Amelotopsidae	4	0	0	0	0	0	0	0	0	0	0	0	0	X 2 =	7	0	0	0	0	0	0	0	0	0	0	0	0
Amnicolidae	4	0	0	0	6	0	0	0	83	0	364	0	0	X 5 =	22	0	0	0	33	0	0	0	500	0	2185	0	0
Athericidae	63	200	103	0	11	0	0	0	3	0	0	6	0	X 2 =	126	400	206	0	22	0	0	0	6	0	0	11	0
Austroperlidae	4	0	0	0	0	0	0	0	0	0	0	0	0	X 1 =	4	0	0	0	0	0	0	0	0	0	0	0	0
Baetidae	2808	339	1101	348	172	189	467	626	531	117	901	1310	28	X 4 =	11233	1357	4404	1390	688	755	1868	2502	2124	466	3603	5239	111
Blephariceridae	0	3	0	0	0	0	3	0	0	0	0	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0
Caenidae	0	0	0	14	0	0	0	0	0	0	0	0	0	X 7 =	0	0	0	97	0	0	0	0	0	0	0	0	0
Ceratopogonidae	0	0	3	8	0	0	3	0	0	0	0	0	0	X 6 =	0	0	17	50	0	0	17	0	0	0	0	0	0
Chiliniidae	0	0	0	0	0	0	0	0	0	6	0	6	0	X 6 =	0	0	0	0	0	0	0	0	33	0	33	0	0
Chironomidae	4077	2174	4017	3767	4462	1243	776	753	2038	1349	231	3147	3191	X 7 =	28542	15218	28120	26368	31235	8702	5429	5274	14264	9441	1615	22028	22339
Corydalidae	4	0	28	0	17	6	25	89	72	161	42	61	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0
Diamphipnoidae	15	0	0	0	0	0	0	47	0	0	0	6	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0
Elmidae	170	161	103	22	122	89	3	8	8	22	0	6	0	X 4 =	681	645	411	89	488	355	11	33	33	89	0	22	0
Empididae	52	25	39	3	28	0	8	14	17	6	0	11	50	X 6 =	311	150	234	17	167	0	50	83	100	33	0	67	300
Glossosomatidae	130	97	31	6	11	0	0	0	0	0	0	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0
Gomphidae	4	0	0	0	0	0	0	0	0	0	0	0	0	X 1 =	4	0	0	0	0	0	0	0	0	0	0	0	0
Gripopterygidae	6405	44	50	3	0	0	6	33	0	28	6	11	0	X 1 =	6405	44	50	3	0	0	6	33	0	28	6	11	0
Hyalellidae	0	0	0	0	0	0	6	6	53	6	0	0	0	X 8 =	0	0	0	0	0	0	44	44	423	44	0	0	0
Hydrobiopsidae	30	36	3	0	0	0	100	25	3	0	14	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydropsychidae	52	1198	4440	117	2026	2747	172	1295	0	1410	6	8564	3286	X 4 =	207	4793	17759	467	8103	10989	689	5182	0	5639	22	34255	13142
Hydroptilidae	0	0	0	19	6	94	0	0	0	0	3	0	2708	X 4 =	0	0	0	78	22	377	0	0	0	0	11	0	10834
Leptoceridae	0	0	0	0	0	0	3	0	203	0	3	6	0	X 4 =	0	0	0	0	0	0	11	0	812	0	11	22	0
Leptophlebiidae	296	58	481	58	22	105	61	600	120	544	8	1055	33	X 2 =	592	117	962	117	44	211	122	1201	239	1088	17	2109	67
Notonemuridae	107	0	0	0	0	0	0	3	42	0	108	6	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0
Oligochaeta	0	0	197	136	17	11	0	75	172	11	395	0	167	X 8 =	0	0	1579	1090	133	89	0	600	1379	89	3158	0	1332
Physidae	0	0	0	3	0	0	0	0	0	11	0	0	305	X 8 =	0	0	0	22	0	0	0	0	0	89	0	0	2442
Psephenidae	4	3	3	0	0	0	0	0	0	11	0	6	0	X 4 =	15	11	11	0	0	0	0	0	0	44	0	22	0
Psychodidae	0	0	0	0	0	0	0	0	3	0	0	0	0	X 10 =	0	0	0	0	0	0	0	0	28	0	0	0	0
Pyalidae	0	0	0	0	0	0	3	0	0	0	0	0	0	X 5 =	0	0	0	0	0	0	14	0	0	0	0	0	0
Simuliidae	30	147	617	22	6	6	117	56	70	0	214	144	0	X 6 =	178	884	3703	133	33	33	701	334	417	0	1284	866	0
Tipulidae	100	72	81	3	0	6	8	0	8	28	11	6	0	X 3 =	300	217	242	8	0	17	25	0	25	83	33	17	0
Total	14930	4637	11423	4540	6910	4534	1763	3639	3525	3724	2433	14424	10007	Total	50934	24169	58208	29974	41003	21684	8999	15321	20750	17255	12457	65024	51521
IBF= Total de la columna D/Total de la columna B =															3,41	5,21	5,10	6,60	5,93	4,78	5,11	4,21	5,89	4,63	5,12	4,51	5,15

E 1: Esperanza	E 2: Pinto	E 3: Esbbio	E 4: El Saque	E 5: El Diablo	E 6: Hijuelas	E 7: Nebuco	E 8: Vista Bella	T1: Llunco
T2: Pichillunco	T3: Boyen	T4: Boyen 2	T5: Pincura	T6: Lipincura	T7: Quilmo 1	T8: Quilmo 2	T9: El Gato	T10: Las Toscas

**Tabla 5.** Análisis de los macroinvertebrados presentes en los sustratos artificiales mediante la aplicación del Índice Biótico de Familias (Hilsenhoff, 1988) (19 de enero-10 de febrero de 2000).

A														B														C														D													
Taxa/Estación	E1(*)	E2	E3	E4	E7	E8	T1	T2	T3	T5	T7	T8	T10	Tolerancia	E1	E2	E3	E4	E7	E8	T1	T2	T3	T5	T7	T8	T10																												
Acari	13	25	88	13	0	38	13	63	50	0	0	50	0	x 4 =	50	100	350	50	0	150	50	250	200	0	0	200	0																												
Aeglidae	0	13	13	13	0	0	25	0	188	0	25	13	0	x 6 =	0	75	75	75	0	0	150	0	1125	0	150	75	0																												
Aeshnidae	0	0	0	13	0	13	0	0	0	0	0	0	0	x 3 =	0	0	0	38	0	38	0	0	0	0	0	0	0																												
Amnicolidae	0	0	0	0	0	0	0	200	25	1350	0	38	0	x 6 =	0	0	0	0	0	0	0	1200	150	8100	0	225	0																												
Athericidae	0	0	563	0	0	0	0	0	0	0	0	0	0	x 2 =	0	0	1125	0	0	0	0	0	0	0	0	0	0																												
Austronemouridae	0	0	0	0	0	0	0	250	0	13	0	0	0	x 1 =	0	0	0	0	0	0	0	250	0	13	0	0	0																												
Baetidae	175	75	100	13	0	0	13	75	100	0	175	0	0	x 4 =	700	300	400	50	0	0	50	300	400	0	700	0	0																												
Caenidae	0	0	0	38	0	25	0	0	0	0	0	0	0	x 7 =	0	0	0	263	0	175	0	0	0	0	0	0	0																												
Ceratopogonidae	13	0	88	300	0	13	0	13	113	0	0	0	0	x 6 =	75	0	525	1800	0	75	0	75	675	0	0	0	0																												
Chiliniidae	0	50	0	13	0	0	0	0	0	0	50	0	0	x 6 =	0	300	0	75	0	0	0	0	0	300	0	0	0																												
Chironomidae	1963	23038	19275	5000	3025	24963	413	13013	48150	213	250	3163	0	x 7 =	13738	161263	134925	35000	21175	174738	2888	91088	337050	1488	1750	22138	0																												
Coenagrionidae	0	0	0	0	0	138	0	0	0	0	75	0	38	0	x 9 =	0	0	0	0	0	1238	0	0	675	0	338	0																												
Corydalidae	0	0	0	0	0	0	0	25	38	0	0	0	0	x 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0																												
Diamphipnoidae	0	0	0	0	0	0	0	188	0	0	0	0	0	x 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0																												
Elmidae	0	0	75	13	0	0	0	0	113	0	0	0	0	x 4 =	0	0	300	50	0	0	0	0	450	0	0	0	0																												
Empididae	0	0	63	0	0	0	0	38	225	0	0	0	0	x 6 =	0	0	375	0	0	0	0	225	1350	0	0	0	0																												
Glossosomatidae	0	75	0	0	0	0	0	0	0	0	0	0	0	x 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0																												
Gripopterygiidae	13	25	25	0	0	0	25	88	225	0	0	0	0	x 1 =	13	25	25	0	0	0	25	88	225	0	0	0	0																												
Hirudinea	0	0	0	0	1488	75	0	0	0	0	0	0	0	x 10 =	0	0	0	0	14875	750	0	0	0	0	0	0	0																												
Hyalellidae	0	0	0	13	0	0	13	75	50	13	0	0	0	x 4 =	0	0	0	50	0	0	50	300	200	50	0	0	0																												
Hydrobiosidae	0	0	0	0	0	0	0	88	13	0	0	0	0	x 0 =	0	0	0	0	0	0	0	0	0	0	0	0	0																												
Hydropsychidae	0	1050	1225	0	0	0	100	600	6075	0	1450	0	0	x 4 =	0	4200	4900	0	0	0	400	2400	24300	0	5800	0	0																												
Hydroptilidae	0	400	0	825	0	25	0	25	1350	0	0	150	0	x 4 =	0	1600	0	3300	0	100	0	100	5400	0	0	600	0																												
Leptoceridae	0	0	25	0	0	0	0	0	13	38	0	13	0	x 2 =	0	0	50	0	0	0	0	0	25	75	0	25	0																												
Leptophlebiidae	38	125	88	0	0	0	25	563	475	0	225	50	0	x 2 =	75	250	175	0	0	0	50	1125	950	0	450	100	0																												
Oligochaeta	213	400	1538	2388	46425	1300	38	1100	3200	75	25	800	0	x 8 =	1700	3200	12300	19100	371400	10400	300	8800	25600	600	200	6400	0																												
Physidae	0	0	0	488	125	0	0	0	0	0	0	0	0	x 8 =	0	0	0	3900	1000	0	0	0	0	0	0	0	0																												
Psephenidae	0	0	0	0	0	0	13	0	0	0	0	0	0	x 4 =	0	0	0	0	0	0	50	0	0	0	0	0	0																												
Psychodidae	0	0	0	0	0	0	0	0	0	0	0	0	13	x 10 =	0	0	0	0	0	0	0	0	0	0	0	0	125																												
Sialidae	0	0	0	0	0	0	0	0	0	13	0	0	0	x 4 =	0	0	0	0	0	0	0	0	0	50	0	0	0																												
Simuliidae	0	338	0	0	0	0	0	50	0	0	0	0	0	x 6 =	0	2025	0	0	0	0	0	300	0	0	0	0	0																												
Sphaeridae	0	0	0	0	0	0	0	0	0	0	0	75	0	x 8 =	0	0	0	0	0	0	0	0	0	0	0	600	0																												
Tipulidae	0	0	200	0	0	0	0	13	0	0	0	0	0	x 3 =	0	0	600	0	0	0	0	38	0	0	0	0	0																												
Turbellaria	0	125	25	0	0	0	0	25	38	0	0	0	0	x 4 =	0	500	100	0	0	0	0	100	150	0	0	0	0																												
Total	2425	25738	23388	9125	51063	26588	675	16488	60438	1788	2200	4388	13		16350	173838	156225	63750	408450	187663	4013	106638	398250	11050	9350	30700	125																												
IBF= Total de la columna D/Total de la columna B =															6,74	6,75	6,68	6,99	8,00	7,06	5,94	6,47	6,59	6,18	4,25	7,00	10,00																												

**Tabla 6.** Análisis de los macroinvertebrados presentes en los sustratos artificiales mediante la aplicación del Índice Biótico de Familias (Hilsenhoff, 1988) (14 de octubre-13 de noviembre de 2000).

A	B												C	D											
Taxa/Estaciones	E1	E2	E3	E4	E6	T1	T2	T4	T5	T6	T7	T9	Tolerancia	E1	E2	E3	E4	E6	T1	T2	T4	T5	T6	T7	T9
Acari	300	0	0	0	163	25	38	75	0	0	25	0	X 4 =	1200	0	0	0	650	100	150	300	0	0	100	0
Amnicolidae	0	0	0	0	0	0	0	0	700	13	13	0	X 6 =	0	0	0	0	0	0	0	0	4200	75	75	0
Athericidae	50	0	0	0	0	0	13	0	0	0	0	0	X 2 =	100	0	0	0	0	0	25	0	0	0	0	0
Baetidae	25	150	100	338	100	25	63	75	0	163	0	0	X 4 =	100	600	400	1350	400	100	250	300	0	650	0	0
Caenide	0	0	0	0	100	0	0	0	0	0	0	0	X 7 =	0	0	0	0	700	0	0	0	0	0	0	0
Ceratopogonidae	0	0	0	13	13	13	0	0	0	0	0	0	X 7 =	0	0	0	88	88	88	0	0	0	0	0	0
Chiliniidae	0	13	0	0	0	0	13	0	0	0	0	0	X 6 =	0	75	0	0	0	0	75	0	0	0	0	0
Chironomidae	2075	8238	18175	14200	18763	3863	1800	125	288	388	225	1788	X 7 =	14525	57663	127225	99400	131338	27038	12600	875	2013	2713	1575	12513
Coenagrionidae	0	0	0	0	13	0	0	0	113	0	0	0	X 9 =	0	0	0	0	113	0	0	0	1013	0	0	0
Corydalidae	0	0	0	0	0	13	0	0	0	13	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0
Decapoda	0	63	0	0	0	0	0	0	13	0	0	0	X 6 =	0	375	0	0	0	0	0	0	75	0	0	0
Elmidae	100	38	0	0	25	0	0	0	0	0	0	0	X 4 =	400	150	0	0	100	0	0	0	0	0	0	0
Empididae	75	0	0	50	13	138	0	0	0	88	0	0	X 6 =	450	0	0	300	75	825	0	0	0	525	0	0
Gripopterygidae	450	500	100	263	13	263	1263	225	13	1363	25	0	X 1 =	450	500	100	263	13	263	1263	225	13	1363	25	0
Hidropsychidae	1100	575	25	63	0	150	63	125	0	0	0	0	X 4 =	4400	2300	100	250	0	600	250	500	0	0	0	0
Hyaellidae	0	13	0	0	0	100	0	0	0	438	0	0	X 8 =	0	100	0	0	0	800	0	0	0	3500	0	0
Hydrobiosidae	0	0	0	13	0	13	25	0	0	0	0	0	X 2 =	0	0	0	25	0	25	50	0	0	0	0	0
Hydroptiliidae	0	0	0	225	113	0	125	0	0	0	0	25	X 4 =	0	0	0	900	450	0	500	0	0	0	0	100
Leptoceridae	25	13	0	0	0	13	0	0	0	0	0	0	X 4 =	100	50	0	0	0	50	0	0	0	0	0	0
Leptophlebiidae	775	88	25	50	25	150	300	350	0	50	200	13	X 2 =	1550	175	50	100	50	300	600	700	0	100	400	25
Notonemouridae	0	0	0	0	0	13	0	0	0	0	0	0	X 1 =	0	0	0	0	0	13	0	0	0	0	0	0
Oligochaeta	225	50	75	300	2650	175	13	0	1088	150	113	525	X 8 =	1800	400	600	2400	21200	1400	100	0	8700	1200	900	4200
Psephenidae	0	0	0	0	0	0	25	0	0	0	0	0	X 4 =	0	0	0	0	0	0	100	0	0	0	0	0
Psychodidae	0	0	0	0	25	0	0	0	0	0	0	0	X 10 =	0	0	0	0	250	0	0	0	0	0	0	0
Sericostomatidae	0	0	0	0	0	0	0	0	25	0	0	0	X 0 =	0	0	0	0	0	0	0	0	0	0	0	0
Simuliidae	0	0	700	2463	0	563	75	0	0	513	0	0	X 6 =	0	0	4200	14775	0	3375	450	0	0	3075	0	0
Tipulidae	200	563	150	300	150	13	0	0	0	0	0	0	X 3 =	600	1688	450	900	450	38	0	0	0	0	0	0
Total	5400	10300	19350	18275	22163	5525	3813	975	2238	3175	600	2350		25675	64075	133125	120750	155875	35013	16413	2900	16013	13200	3075	16838
IBF= Total de la columna D/Total de la columna B =														4,75	6,22	6,88	6,61	7,03	6,34	4,30	2,97	7,16	4,16	5,13	7,16

E 1: Esperanza	E 2: Pinto	E 3: Esbbio	E 4: El Saque	E5: El Diablo	E 6: Hijuelas	E 7: Nebuco	E 8: Vista Bella	T1: Lluanco
T2: Pichilluanco	T3: Boyen	T4: Boyen 2	T5: Pincura	T6: Lipincura	T7 : Quilmo 1	T8: Quilmo 2	T9: El Gato	T10: Las Toscas

**Tabla 7.** Análisis de los macroinvertebrados presentes en los sustratos artificiales mediante la aplicación del Índice Biótico de Familias (Hilsenhoff, 1988) (11 de mayo – 26 de junio de 2001).

A			B							C	D									
Taxa/Estación	E7	T1	T2	T3	T5	T6	T8	T9	T10	Tolerancia	E7	T1	T2	T3	T5	T6	T8	T9	T10	
Acari	0	0	0	0	0	0	0	25	0	X 4 =	0	0	0	0	0	0	0	100	0	
Amnicolidae	0	25	63	13	0	13	13	0	0	X 6 =	0	150	375	75	0	75	75	0	0	
Athericidae	0	0	75	0	0	0	0	0	0	X 2 =	0	0	150	0	0	0	0	0	0	
Chironomidae	1150	800	1125	738	338	600	2563	200	20050	X 7 =	8050	5600	7875	5163	2363	4200	17938	1400	140350	
Corydalidae	0	25	125	0	0	0	0	0	0	X 0 =	0	0	0	0	0	0	0	0	0	
Ecnomidae	0	0	38	0	0	0	0	0	0	X 3 =	0	0	113	0	0	0	0	0	0	
Elmidae	50	0	0	0	0	0	0	25	0	X 4 =	200	0	0	0	0	0	0	100	0	
Ephydriidae	0	0	0	0	0	0	0	0	25	X 6 =	0	0	0	0	0	0	0	0	150	
Gomphidae	0	0	0	0	0	0	13	0	0	X 1 =	0	0	0	0	0	0	12,5	0	0	
Gripopterygidae	25	250	225	0	0	25	38	75	0	X 1 =	25	250	225	0	0	25	38	75	0	
Hyalellidae	0	25	13	50	0	13	0	0	0	X 8 =	0	200	100	400	0	100	0	0	0	
Hydropsychidae	25	350	175	0	0	0	38	100	0	X 4 =	100	1400	700	0	0	0	150	400	0	
Leptophebiidae	0	50	163	0	0	0	0	0	0	X 2 =	0	100	325	0	0	0	0	0	0	
Notonemouridae	0	0	0	37,5	0	0	0	0	0	X 0 =	0	0	0	0	0	0	0	0	0	
Oligochaeta	300	0	813	650	350	238	250	550	2900	X 8 =	2400	0	6500	5200	2800	1900	2000	4400	23200	
Physidae	0	0	0	0	0	250	0	0	0	X 8 =	0	0	0	0	0	2000	0	0	0	
Psephenidae	0	0	13	0	0	0	0	0	0	X 4 =	0	0	50	0	0	0	0	0	0	
Psychodidae	0	0	0	0	0	13	0	0	0	X 10 =	0	0	0	0	0	125	0	0	0	
Pyrilidae	0	0	0	13	0	0	0	0	0	X 5 =	0	0	0	63	0	0	0	0	0	
Sialidae	0	0	13	38	25	0	0	0	0	X 4 =	0	0	50	150	100	0	0	0	0	
Simuliidae	25	1025	225	0	0	3563	325	75	0	X 4 =	150	6150	1350	0	0	21375	1950	450	0	
Sphaeridae	0	0	75	13	0	13	0	0	0	X 8 =	0	0	600	100	0	100	0	0	0	
Tipulidae	0	0	25	0	0	0	0	0	0	X 3 =	0	0	75	0	0	0	0	0	0	
Total	1575	2550	3163	1550	713	4725	3238	1050	22975		10925	13850	18488	11150	5263	29900	22163	6925	163700	
Total de la columna D / Total de la columna B =											6,94	5,43	5,85	7,19	7,39	6,33	6,85	6,60	7,13	

E 1: Esperanza	E 2: Pinto	E 3: Esbbio	E 4: El Saque	E5: El Diablo	E 6: Hijuelas	E 7: Nebuco	E 8: Vista Bella	T1: Lluanco
T2: Pichilluanco	T3: Boyen	T4: Boyen 2	T5: Pincura	T6: Lipincura	T7 : Quilmo 1	T8: Quilmo 2	T9: El Gato	T10: Las Toscas