

<b>APPENDIX 1 SOUTH WEST CHRISTCHURCH WATERWAYS INSECT SURVEY</b>						
<b>Species list, endemism, relative commonness and consistency</b>						
	<b>Specimens</b>				<b>Consistency</b>	
	<b>Slow</b>	<b>Low</b>	<b>Ponds</b>	<b>TOTAL</b>	<b>No</b>	<b>% of 17</b>
	<b>flow</b>	<b>flow</b>				<b>sites</b>
<b>Freshwater insects (about 36 species, 35 or 97% endemic )</b>						
Chironomini 2 species #	7	1	4	12	7	41.2
<i>Corynoneura scutellata</i> A	162	4	2	168	11	64.7
Orthocladini species 1	43	19	32	94	14	82.4
Orthocladini species 2	54	11		65	9	52.9
Orthocladini species 3		10	8	18	3	17.6
Orthocladini species 4	1	47	9	57	4	23.5
Orthocladini species 5	1			1	1	5.9
Orthocladini species 6	1			1	1	5.9
?Orthocladini species 7	6			6	2	11.8
?Orthocladini species 8	8			8	1	5.9
?Orthocladini species 9	1			1	1	5.9
Orthocladini species 10		20	3	23	2	11.8
<i>Polypedium parvus</i> #	5	19	4	28	7	41.2
<i>Gressitus antarcticus</i>	7	1		8	5	29.4
Ceratopoginidae#			1	1	1	5.9
<i>Dasyhelea ?egraria</i>	4		7	11	3	17.6
<i>Dasyhelea</i> n sp 2		2		2	2	11.8
<i>Palpomyia</i> species & larva	2		4	6	1	5.9
<i>Atrichopogon vestitipennis</i>	1			1	1	5.9
<i>Paralimnophora skusei</i>	8	19	6	33	13	76.5
Tipulidae -crane fly	5		15	20	7	41.2
<i>Zelandotipula</i> sp	1			1	1	5.9
Dixiidae	1			1	1	5.9
<i>Austrosimulium</i> sp*	1			1	1	5.9
<i>Neolimnia sigma</i>	1			1	1	5.9
<i>Ceratomerus crassinervis</i>	1			1	1	5.9
<i>Aoteapsche cathrinae</i>	1			1	1	5.9
<i>Hydrobiosus frater</i>	1			1	1	5.9
<i>Hydrobiosus perumbipennis</i>	16			16	4	23.5
<i>Oxythera albiceps</i> #	120	41		161	8	47.1
<i>Paroxythera hendersoni</i> #	42	17		59	5	29.4
<i>Polyplectrodes pueralis</i>	7	1		8	5	29.4
<i>Psilochorema bidens</i>	19			19	3	17.6
<i>Psilochorema tautara</i>	5			5	1	5.9
<i>Pycnocentria evecta</i>	2			2	1	5.9
<i>Pycnocentrodes aeris</i>	10			10	3	17.6
<b>TOTAL</b>	<b>557</b>	<b>211</b>	<b>95</b>	<b>851</b>	<b>133</b>	

<b>APPENDIX 1 SOUTH WEST CHRISTCHURCH WATERWAYS INSECT SURVEY</b>						
	Commonness-numbers				Consistency	
<b>SUMMARY</b>	<b>Slow</b>	<b>Low</b>	<b>Ponds</b>	<b>TOTAL</b>	<b>No</b>	<b>% of 17</b>
	<b>flow</b>	<b>flow</b>				<b>sites</b>
	<b>Mud and wetland inhabitants 31-33 species all endemics</b>					
<b>8 spp, 12.5 % introduced</b>	<b>Freshwater -favour still or slow flowing water</b>					
<i>Chironomus zealandicus</i>	103	96	9	<b>208</b>	11	<b>64.7</b>
? <i>Culex pervigilans</i>	14	2	1	<b>17</b>	8	<b>47.1</b>
<i>Hydrophorus praecox</i> (A)	16	3	105	<b>124</b>	7	<b>41.2</b>
<i>Xanthocnemis zelandica</i>	17	0		<b>17</b>	5	<b>29.4</b>
<i>Hudsonema amabile</i>	54	6		<b>60</b>	5	<b>29.4</b>
<i>Oxycetis unicolor</i>	83	9	5	<b>97</b>	8	<b>47.1</b>
<i>Triplectides cephalatus</i>	5	7		<b>12</b>	4	<b>23.5</b>
<i>Triplectides obsoletus</i>	19	1		<b>20</b>	4	<b>23.5</b>
<b>TOTAL</b>	<b>315</b>	<b>124</b>	<b>120</b>	<b>559</b>	<b>52</b>	
<b>All endemic</b>	<b>Mud and wetland inhabitants -28-30 species</b>					
<i>Scatella</i> about 3 species	207	160	1672	<b>2039</b>	13	<b>76.5</b>
<i>Scatella nebulosa</i>	55	49	277	<b>381</b>	11	<b>64.7</b>
<i>Ephydrella</i>	11		5	<b>16</b>	4	<b>23.5</b>
<i>Parahydina</i> sp	1	2		<b>3</b>	3	<b>17.6</b>
<i>Tetrachaetus bipunctatus</i>	10	115	27	<b>152</b>	12	<b>70.6</b>
<i>Hercostomus argentifacies</i>	54	73		<b>127</b>	5	<b>29.4</b>
? <i>Diaphorus</i> & other sp	19	24	8	<b>51</b>	9	<b>52.9</b>
<i>Sympycnus</i>	3	10		<b>13</b>	4	<b>23.5</b>
<i>Helichochaetus discifer</i>	2			<b>2</b>	1	<b>5.9</b>
<i>Phthitia lobocercus</i>	19	20	179	<b>218</b>	10	<b>58.8</b>
<i>Phthitia thomasi/nothomasi</i>	10	14	10	<b>34</b>	9	<b>52.9</b>
? <i>Spelobia</i> sp -undet sp 1	6	0	48	<b>54</b>	4	<b>23.5</b>
Limosininae spp (brown)	0	0	2	<b>2</b>	2	<b>11.8</b>
Limosininae spp#		3	0	<b>3</b>	1	<b>5.9</b>
<i>Millerina</i> species 1	15	6		<b>21</b>	7	<b>41.2</b>
<i>Millerina</i> species 2	1	5	2	<b>8</b>	5	<b>29.4</b>
<i>Millerina</i> species 3	8	40	78	<b>126</b>	7	<b>41.2</b>
<i>Millerina</i> species 4	1	5	24	<b>30</b>	6	<b>35.2</b>
<i>Millerina</i> species 5	1		1	<b>1</b>	2	<b>11.8</b>
<i>Millerina</i> species 6	1			<b>1</b>	1	<b>5.9</b>
<i>Millerina</i> species 7	3			<b>3</b>	2	<b>11.8</b>
<i>Millerina</i> species 8	1			<b>1</b>	1	<b>5.9</b>
<i>Millerina</i> species 9			1	<b>1</b>	1	<b>5.9</b>
<i>Millerina</i> species 10	3			<b>3</b>	2	<b>11.8</b>
<i>Millerina</i> spp	6		6	<b>12</b>	3	<b>17.6</b>
<i>Limnohelina spinipes</i>	4		20	<b>24</b>	3	<b>17.6</b>
<i>Limnohelina</i> ?new species			1	<b>1</b>	1	<b>5.9</b>
<i>Helophilus hotchstetteri</i>		1		<b>1</b>	1	<b>5.9</b>
<i>Gynoplistia pedestris</i>	4			<b>4</b>	2	<b>11.8</b>
<b>Total muddy area</b>	<b>445</b>	<b>527</b>	<b>2361</b>	<b>3332</b>	<b>132</b>	

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	Commonness-numbers				Consistency	
<b>SUMMARY</b>	<b>Slow</b>	<b>Low</b>	<b>Ponds</b>	<b>TOTAL</b>	<b>No</b>	<b>% of 19</b>
	<b>flow</b>	<b>flow</b>			<b>of sites</b>	<b>sites</b>
<b>35-40 insect spp</b>	<b>Herbivores -45-67% endemics</b>					
<i>Hydrellia enderbii</i>	240	116	208	<b>564</b>	17	<b>89.5</b>
Cecidomyiinae A/E 2+spp	17	15	1	<b>33</b>	12	<b>63.2</b>
<i>Hydrellia velutinifrons</i>	6	7	2	<b>15</b>	6	<b>31.6</b>
<i>Hydrellia</i> ?new 1-2 species	6	37	7	<b>50</b>	6	<b>31.6</b>
<i>Hydrellia tritici</i> A	22	1	36	<b>59</b>	6	<b>31.6</b>
<i>Psilopa metallica</i>	39	5	16	<b>60</b>	9	<b>47.4</b>
<i>Cerodontha australis</i> # A	30	8	33	<b>71</b>	9	<b>47.4</b>
<i>Haplomyza chenopodii</i>	2			<b>2</b>	1	<b>5.3</b>
<i>Phytomyza atricornis</i>		2		<b>2</b>	1	<b>5.3</b>
<i>Phytobia umbria</i>		1		<b>1</b>	1	<b>5.3</b>
Agromyzidae leafminers		2	4	<b>6</b>	2	<b>10.6</b>
<i>Scatomyza elmoi</i>	1			<b>1</b>	1	<b>5.3</b>
<i>Anthomyia punctipennis</i> (A)	1		14	<b>15</b>	2	<b>10.6</b>
<i>Irenimus</i> weevil			5	<b>5</b>	1	<b>5.3</b>
<i>Philaneus spumarius</i> (A)			1	<b>1</b>	1	<b>5.3</b>
<i>Nysius huttoni</i> - wheat bug		225	1	<b>226</b>	3	<b>15.8</b>
Miridae		1		<b>1</b>	1	<b>5.3</b>
Aphids (A)	17	13	70	<b>100</b>	10	<b>52.7</b>
Delphacidae			2	<b>2</b>	1	<b>5.3</b>
Psyllidae -not <i>Triozia</i> (?A)	2		2	<b>4</b>	3	<b>15.8</b>
Psyllidae - <i>Triozia</i>	2		1	<b>3</b>	3	<b>15.8</b>
Lygaeidae nymph	1			<b>1</b>	1	<b>5.3</b>
<i>Odontria</i> grass grub	1			<b>1</b>	1	<b>5.3</b>
Case bearer moth larva	1			<b>1</b>	1	<b>5.3</b>
Grass mealy bug	1			<b>1</b>	1	<b>5.3</b>
Cicindelidae 3 spp		6	20	<b>26</b>	6	<b>31.6</b>
<i>Zygina zelandica</i>	15	9	77	<b>101</b>	13	<b>63.2</b>
Alyerodidae-whitefly (?A)	14			<b>14</b>	1	<b>5.3</b>
Casebearer larvae	1		6	<b>7</b>	2	<b>10.6</b>
Noctuidae larvae			2	<b>2</b>	1	<b>5.3</b>
Slugs			4	<b>4</b>	1	<b>5.3</b>
<i>Pontania proxima</i> A	3	8	0	<b>11</b>	4	<b>21</b>
<i>Nematus oligospilus</i>		1	1	<b>2</b>	2	<b>10.6</b>
<b>TOTAL</b>	<b>422</b>	<b>457</b>	<b>513</b>	<b>1392</b>	<b>130</b>	
	<b>Pollinators</b>					
<i>Bombus terrestris</i> (A)	0	0	1	<b>1</b>	1	<b>5.3</b>
<i>Apis mellifera</i> (A)	0	1	0	<b>1</b>	1	<b>5.3</b>
<i>Lasioglossum sordidum</i>	2	0	16	<b>18</b>	4	<b>21</b>
<i>Leioproctus fulvescens</i>	0	0	1	<b>1</b>	1	<b>5.3</b>
<b>TOTAL</b>	<b>2</b>	<b>1</b>	<b>18</b>	<b>21</b>	<b>7</b>	
	<b>Dung</b>					
<i>Hybopygia varia</i> (A)	28	5	35	<b>68</b>	8	<b>42.1</b>
<i>Muscina stabulans</i> (A)	5	3	3	<b>11</b>	3	<b>15.8</b>
<i>Stomoxys calcitrans</i> (A)			2	<b>2</b>	1	<b>5.3</b>
<i>Lasionempoda hirsuta</i> (A)			1	<b>1</b>	1	<b>5.3</b>
<b>TOTAL</b>	<b>33</b>	<b>8</b>	<b>41</b>	<b>82</b>	<b>13</b>	

<b>APPENDIX 1 SOUTH WEST CHRISTCHURCH WATERWAYS INSECT SURVEY</b>						
	Commonness-numbers				Consistency	
<b>SUMMARY</b>	<b>Slow</b>	<b>Low</b>	<b>Ponds</b>	<b>TOTAL</b>	<b>No</b>	<b>% of 19</b>
	<b>flow</b>	<b>flow</b>				<b>sites</b>
<b>6 species, 50% adventive</b>	<b>Carrion</b>					
<i>Xenocalliphora hortonae</i>	2		2	4	3	15.8
<i>Lucilia sericata</i> (A)	2		1	3	3	15.8
<i>Calliphora vicina</i> (A)	5		4	9	4	21
<i>Calliphora stygia</i> (A)		1	1	2	2	10.6
<i>Gaurax</i> sp.	4		5	9	3	15.8
<i>Gaurax flavoapicalis</i>	3		1	4	3	15.8
<i>Gaurax neozelandica</i>	2	6		8	3	15.8
<b>TOTAL</b>	<b>18</b>	<b>7</b>	<b>14</b>	<b>39</b>	<b>21</b>	
<b>30-40 insect species</b>	<b>Forest &amp; shrubland litter inhabitants - most endemic except for booklice, Phoridae</b>					
<i>Anomalomya guttata</i> #	10	4	3	17	8	42.1
<i>Mycetophila</i> sp.#	17	6		23	9	47.4
Mycetophilidae other	3	6	22	31	7	36.8
<i>Zygomia</i> sp.	2	2	2	6	5	26.3
Keroplastidae & <i>Macrocera</i>	1	2		3	3	15.8
<i>Molophilus quadrifidus</i>	1	1		2	2	10.6
<i>Zelandogochina ?cubitalis</i>		2		2	1	5.3
<i>Mycropygus</i> sp.*	4	1		5	2	10.6
<i>Limnophora</i> sp		2		2	1	5.3
Psychodidae (grey/hairy)*	3	1		4	3	15.8
<i>Psychoda penicillata</i> A	1	1	1	3	3	15.8
<i>Psychoda ?alternata</i> A	6	1	1	8	4	21
<i>Psychoda</i> brown(female)	22	10		32	6	31.6
<i>Psychoda</i> spp	27	2	4	33	8	42.1
Tipulidae large#	7	38	30	75	10	52.7
Sciaridae- root gnats#	33	54	107	194	16	84.2
Lestromerinae		2	17	19	3	15.8
Phoridae -undet genus#	10	1		11	6	31.6
Phoridae - <i>Megaselia</i> "	16	20	22	58	11	57.9
<i>Drosophila ?funebria</i>	5	1	6	12	4	26.3
Psocoptera-booklice	4	5	4	13	7	36.8
Cave weta	1	3		4	4	21
Woodlice (A)	1			1	4	21
Lathridiidae	2		4	6	5	26.3
<i>Melanophthalma gibbosa</i> # A	4	1	1	6	4	21
<b>TOTAL</b>	<b>180</b>	<b>166</b>	<b>224</b>	<b>570</b>	<b>136</b>	
<b>10 spp, 50% endemic</b>	<b>Grassland, garden, wetland litter inhabitants</b>					
<i>Musca domestica</i> (A)	2			2	2	10.6
<i>Neoxareta spiniger</i> (A)	1			1	2	10.6
<i>Eristalis tenax</i> (A)	1			1	2	10.6
<i>Scaptomyza fuscitarsis</i>	3		4	7	4	21
<i>Gaurax</i> sp.	4		5	9	3	15.8
<i>Gaurax mesopleuralis</i>		2	1	3	2	10.6
<i>Pullimosina heteroneura</i> (A)	5			5	2	10.6
<i>Lonchoptera furcata</i> (A)	4			4	3	15.8
<i>Makawi hurleyi</i> landhopper		1	2	3	2	10.6
<b>TOTAL litter</b>	<b>13</b>	<b>2</b>	<b>10</b>	<b>25</b>	<b>22</b>	

SOUTH WEST CHRISTCHURCH FRESHWATER INSECT SURVEY						
Diversity and consistency summary						
	Slow flow	Low flow	Ponds	TOTAL	No	% of 19 sites
40-60 insect spp	<b>Parasites</b>					
Tachinidae	6	3	12	21	7	36.8
<i>Pales</i> (blue) species	3	2	1	6	4	21
<i>Neolimnia sigma</i>	1	0	0	1	1	5.3
Ichneumonidae	18	4	11	33	6*	42.8
Braconidae	66	12	14	92	15	78.9
Aphidiinae	2	1	1	4	3	15.8
<i>Hemilexomyia spinosa</i>	3	6	3	12	9	47.4
<i>Styloclista</i> spp	2			2	1	5.3
Diapriidae others	32	5	19	56	12	63.2
Charipinae	6		6	12	4	21
Baeinae	5		10	15	5	26.3
<i>Dendrocercus</i> sp.	1			1	1	5.3
<i>Anacharis zealandica</i> (I)	2	1		3	3	15.8
<i>Gonozius</i> sp	1			1	1	5.3
Encyrtidae	6		27	33	8	42.1
?Signophoridae		1		1	1	5.3
Proctotrupidae	2			2	2	10.6
"Pteromalidae"	1			1	1	5.3
<i>Elasmus</i> sp			1	1	1	5.3
Other chalcoids	35	6	29	70	15	78.9
Mymaridoidea			2	2	2	10.6
Aelothrips	1			1	1	5.3
<i>Pollenia pseudorudis</i> (A)	2	1	1	4	3	15.8
<b>TOTAL</b>	<b>195</b>	<b>42</b>	<b>137</b>	<b>374</b>	<b>100</b>	
14 insect, ?5-8 spider spp	<b>Predators -terrestrial -all insects endemic, some spiders may be adventive</b>					
Spiders	25	14	29	68	16	84.2
Harvestmen	3		1	4	2	10.6
<i>Vespula vulgaris</i>			2	2	1	5.3
<i>Micromus tasmaniae</i>			1	1	1	5.3
<i>Cryptosceneae australis</i> (A)	4	1		5	3	15.8
Neididae		1		1	1	5.3
Earwig		1		1	1	5.3
<i>Parentia</i>	2		1	3	2	10.6
<i>Parentia anomalicosta</i>		2		2	1	5.3
<i>Parentia griseocollis</i>		2		2	2	10.6
<i>Parentia mobile</i>	1			1	1	5.3
<i>Alchalcus seperatus</i>	4	6		10	3	15.8
Ladybird -black small	1			1	1	5.3
Rove beetles	7		2	9	5	26.3
Carabidae -ground beetle		2		2	1	5.3
<b>TOTAL</b>	<b>47</b>	<b>29</b>	<b>36</b>	<b>112</b>	<b>41</b>	