
APPENDIX 8:

Details of Ecological Data

Appendix 8A Plant species recorded within the Study Area

Species	Habit	Exotic	Relative Abundance							
			Stream Channel/Nu llah	Cultivated Land	Fish Pond	Grass-shrubland	Urbanised	Mixed Woodland	Wasteland	Orchard
<i>Acacia confusa</i>	T	E					+++	+++	++	
<i>Adiantum flabellatum</i>	F					+				
<i>Alangium chinense</i>	T					+		+		
<i>Aleurites moluccana</i>	T	E						++		
<i>Aleurites montana</i>	T	E							+	
<i>Allamanda neritifolia</i>	S	E					++			
<i>Allium fistulosum</i>	H			+						
<i>Alocasia macrorrhiza</i>	H		++	++	++		++	+++		
<i>Alpinia zerumbet cv. Variegata</i>	H	E					+			
<i>Alternanthera philoxeroides</i>	H			+						
<i>Amaryllis sp.</i>	H	E		+						
<i>Annona squamosa</i>	T	E		+						
<i>Apluda mutica</i>	G	E		+						
<i>Aporosa dioica</i>	T					+		++		
<i>Araucaria heterophylla</i>	T	E					++	+		
<i>Artocarpus heterophyllus</i>	T	E								+
<i>Asparagus cochinchinensis</i>	H					+				
<i>Atalantia buxifolia</i>	T					+				
<i>Baekkea frutescens</i>	S					++				
<i>Bamboo (unknown species)</i>	B		+			+	++	++		
<i>Bambusa ventricosa</i>	B						+			
<i>Bauhinia blakeana</i>	T						+			
<i>Bidens pilosa</i>	H		++	+++	+					
<i>Blechnum orientale</i>	F					++				
<i>Boehmeria nivea</i>	S			+						
<i>Brachiaria mutica</i>	G	E		++					+++	
<i>Brassica alboglabra</i>	H	E		+						
<i>Brassica chinensis</i>	H	E		++						
<i>Brassica oleracea var. italica</i>	H	E		+						
<i>Brassica parachinensis</i>	H	E		++						
<i>Brassica sp.</i>	H	E		+						
<i>Breynia fruticosa</i>	S					+				
<i>Bridelia tomentosa</i>	T					++		++		
<i>Brucea javanica</i>	S					+				
<i>Calliandra haematocephala</i>	S	E					++			
<i>Callicarpa nudiflora</i>	S					+				
<i>Callistemon viminalis</i>	T	E					+			
<i>Camellia sp.</i>	S	E		+						
<i>Carica papaya</i>	T	E		++						
<i>Casuarina equisetifolia</i>	T	E					+			
<i>Celtis tetrandra subsp. sinensis</i>	T		+			+	+	++		+
<i>Chloris barbata</i>	G	E							++	
<i>Christella parasitica</i>	F					+				
<i>Chrysalidocarpus lutescens</i>	T	E					+			
<i>Citrus maxima</i>	T	E	+				+			
<i>Clausena lansium</i>	T	E					+	+		++
<i>Colocasia esculenta</i>	H	E		+						
<i>Commelina diffusa</i>	H			+	++					

Species	Habit	Exotic	Relative Abundance							
			Stream Channel/Nu llah	Cultivated Land	Fish Pond	Grass-shrubland	Urbanised	Mixed Woodland	Wasteland	Orchard
<i>Conyza canadensis</i>	H	E		++	++				+++	
<i>Coriandrum sativum</i>	H	E		+						
<i>Cratogeomys cochinchinensis</i>	T					++		++		
<i>Cuscuta japonica</i>	C				+					
<i>Cyclosorus interruptus</i>	F				+					
<i>Cymbopogon sp.</i>	G					+				
<i>Cynodon dactylon</i>	G			+						
<i>Cyperus sp.</i>	SE			+						
<i>Delonix regia</i>	R	E					+	+		
<i>Desmos chinensis</i>	S					+		+		
<i>Dianella ensifolia</i>	H					++		+		
<i>Dicranopteris linearis</i>	F					+++				
<i>Dimocarpus longan</i>	T	E	+	++	++	+	++	++		+++
<i>Dioscorea alata</i>	H	E		+						
<i>Dioscorea sp.</i>	C					+				
<i>Echinochloa crus-galli</i>	G	E		+					+	
<i>Eichhornia crassipes</i>	H	E			+					
<i>Elephantopus scaber</i>	H					+				
<i>Embelia laeta</i>	C					+				
<i>Eriachne pallescens</i>	G					++				
<i>Eriobotrya japonica</i>	T	E					+			
<i>Eucalyptus citriodora</i>	T	E						+++		
<i>Eulalia speciosa</i>	G					+++				
<i>Euphorbia hirta</i>	H			+						
<i>Evodia leptota</i>	T					+				
<i>Ficus elastica</i>	T	E					+			
<i>Ficus hirta</i>	S					+		+		
<i>Ficus hispida</i>	T			++		+	+	+		
<i>Ficus microcarpa</i>	T						+	++		
<i>Ficus microcarpa variegata</i>	T	E					+			
<i>Fimbristylis sp.</i>	SE			+						
<i>Glochidion eriocarpum</i>	S					+				
<i>Glochidion lanceolatum</i>	T					+				
<i>Gossampinus malabaricum</i>	T	E			+		+			
<i>Hedyotis hedyotideia</i>	H					+				
<i>Helicteres angustifolia</i>	H					+				
<i>Hibiscus sp.</i>	T						+			
<i>Homalium cochinchinensis</i>	T					+				
<i>Illex asprella</i>	S					++				
<i>Imperata cylindrica</i>	G					+				
<i>Inula cappa</i>	H					+				
<i>Ipomoea aquatica</i>	C	E		+++						
<i>Ipomoea batata</i>	C	E					+			
<i>Ipomoea cairica</i>	C	E	++		++			++		
<i>Isachne globosa</i>	G			+++						
<i>Ischaemum sp.</i>	G		+			+++				
<i>Ixora chinensis</i>	S					+				
<i>Juniperus chinensis</i>	T	E					+	+		
<i>Kyllinga sp.</i>	SE			+						
<i>Lactuca sativa</i>	H			+						

Species	Habit	Exotic	Relative Abundance							
			Stream Channel/Nu llah	Cultivated Land	Fish Pond	Grass-shrubland	Urbanised	Mixed Woodland	Wasteland	Orchard
<i>Lantana camara</i>	S	E		++	++	+		++		+
<i>Liquidambar formosana</i>	T					+				
<i>Liriope spicata</i>	H							+		
<i>Litchi chinensis</i>	T	E		++			+	+		++
<i>Litsea cubeba</i>	T					+				
<i>Litsea glutinosa</i>	T					+		++		++
<i>Litsea rotundifolia</i>	S					+		+		
<i>Lophostemon conferta</i>	T	E						+		
<i>Ludwigia octovalvis</i>	S			+++	++					
<i>Lycopersicon esculentum</i>	H	E		+						
<i>Lygodium flexuosum</i>	F					+				
<i>Lygodium japonicum</i>	H					+				
<i>Macaranga tanarius</i>	T		+		++	++	++	++		+
<i>Malvaviscus arboreus</i>	S	E					++			
<i>Mangifera indica</i>	T	E	+							
<i>Maranta arundinacea</i>	H	E		+						
<i>Melaleuca quinquenervia</i>	T	E					++			
<i>Melastoma candidum</i>	S					+				
<i>Melastoma dodecandrum</i>	S					+				
<i>Melastoma sanguineum</i>	S					++				
<i>Melia azedarach</i>	T	E			+	+		++		+
<i>Melinis repens</i>	G					+++				
<i>Michelia alba</i>	T						+			
<i>Microcos paniculata</i>	T					+		+		
<i>Microstegium ciliatum</i>	G		++		+					
<i>Mikania micrantha</i>	C	E		++	+++			++		
<i>Milletia speciosa</i>	C							+		
<i>Miscanthus sp.</i>	G					++				
<i>Musa paradisiaca</i>	T	E		++			++		+	
<i>Nelumbo nucifera</i>	H	E			++					
<i>Neyraudia reynaudiana</i>	G			++	++	+++			+++	
<i>Pandanus tectorius</i>	S					+				
<i>Panicum maximum</i>	G	E	+++	+++	++				+++	
<i>Panicum repens</i>	G			++						
<i>Paspalum conjugatum</i>	G	E		+++	++					
<i>Pennisetum alopecuroides</i>	G	E		+						
<i>Pennisetum purpureum</i>	G	E	++	++	++	+++				
<i>Phoenix hanceana</i>	S					+				
<i>Phoenix roebelenii</i>	S	E						++		
<i>Phyllanthus cochinchinensis</i>	S					+		++		
<i>Phyllanthus emblica</i>	T					+				
<i>Pinus massoniana</i>	T					+++				
<i>Plumeria rubra</i>	T	E					+			
<i>Polygonum chinensis</i>	H			+	+					
<i>Polygonum hydropiper</i>	H			+						
<i>Praxelis clematidea</i>	H	E		+	+					
<i>Psidium guajava</i>	T	E		+	+					
<i>Psychotria rubra</i>	S					++				
<i>Pteridium aquilinum</i>	F					++				
<i>Pueraria lobata</i>	C	E		+	+	+				

Species	Habit	Exotic	Relative Abundance							
			Stream Channel/Nu llah	Cultivated Land	Fish Pond	Grass-shrubland	Urbanised	Mixed Woodland	Wasteland	Orchard
<i>Rhaphiolepis indica</i>	S					++				
<i>Rhodomyrtus tomentosa</i>	S					++				
<i>Rhus chinensis</i>	T					+				
<i>Rhynchelytrum repens</i>	G			+						
<i>Rorippa nasturtium-aquaticum</i>	H			+++						
<i>Rotala rotundifolia</i>	H			+						
<i>Rumex maritima</i>	H		+							
<i>Sageretia theezans</i>	C							+		
<i>Sapium discolor</i>	T					++				
<i>Sapium sebiferum</i>	T			+		+			+	
<i>Schefflera octophylla</i>	T					+				
<i>Scolopia chinensis</i>	T					+				
<i>Sesbania cochinchinensis</i>	H	E							+++	
<i>Sida rhombifolia</i>	S			+						
<i>Smilax china</i>	C					++				
<i>Solanum nigrum</i>	H	E			+		+			
<i>Solanum torvum</i>	S	E		+				+		
<i>Spilanthes acmella</i>	H			+						
<i>Spinacia oleracea</i>	H	E		+						
<i>Stellaria media</i>	H			++						
<i>Stephenia longa</i>	C					+				
<i>Sterculia lanceolata</i>	T							+		
<i>Strophanthus divaricatus</i>	S					+				
<i>Taraxacum sp.</i>	H						+			
<i>Trema orientalis</i>	T					+				
<i>Urena lobata</i>	S			+		+				
<i>Uvaria microcarpa</i>	S		+			+		+		
<i>Wedelia triloba</i>	C	E			+					
<i>Zanthoxylum avicennae</i>	S					+		+		
<i>Zea mays</i>	H	E		+						
<i>Zingiber officinale</i>	H	E		+						

Growth form: T = tree, S = shrub, H = herb, C = climber, F = fern, G = grass, SE = sedge

Relative abundance: +++ = abundant, ++ = common, + = occasional, = scarce

Appendix 8B Bird species and their abundance recorded in the two fishponds near San Wai STW in the Study Area

Common names	Latin names	Aug 01	Sep 01	Oct 01	Nov 01	Dec 01	Jan 02	Feb 02	Commonness and distribution
Yellow Bittern*	<i>Ixobrychus sinensis</i>	1							CL
Little Egret*	<i>Egretta garzetta</i>						1		CW
Chinese Pond Heron*	<i>Ardeola bacchus</i>	1				2	1		CW
Common Kingfisher*	<i>Alcedo atthis</i>	2		1	1				CW
White-breasted Kingfisher*	<i>Amaurornis phoenicurus</i>		1						CW
Chinese Bulbul	<i>Pycnonotus sinensis</i>	3		1		2			CW
Yellow-bellied Prinia	<i>Prinia flaviventris</i>	1			1				CW
Black-necked Starling	<i>Sturnus nigricollis</i>			1	1			2	CW
Crested Myna	<i>Acridotheres cristatellus</i>		2		1		2		CW
Total birds		8	3	3	4	4	4	2	
Total species		5	2	3	4	2	3	1	

Commonness and distribution: CW = common and widespread, CL = common/uncommon and localised (Viney *et al.* 1996)

* wetland dependent species

Appendix 8C Bird species and their abundance recorded in the other fishponds in the Study Area (codes for commonness and distribution follows App. 8B)

Common names	Latin names	Aug 01	Sep 01	Oct 01	Nov 01	Dec 01	Jan 02	Feb 02	Commonness and distribution
Little Egret	<i>Egretta garzetta</i>	3		1	2	1	2	1	CW
Cattle Egret	<i>Bubulcus ibis</i>			1		1			CW
Chinese Pond Heron	<i>Ardeola bacchus</i>			1					CW
Great Egret	<i>Casmerodius albus</i>	2							CL
Green Sandpiper	<i>Tringa ochropus</i>	1	1		1		1		CW
Common Sandpiper	<i>Actitis hypoleucos</i>	2	1		1	1	1	2	CW
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	1		1	2			1	CW
Common Kingfisher	<i>Alcedo atthis</i>	1		1				1	CW
Spotted Dove	<i>Streptopelia chinensis</i>	1		2	1	1			CW
Yellow Wagtail	<i>Motacilla flava</i>			1			1		CL
Chinese Bulbul	<i>Pycnonotus sinensis</i>	1				2			CW
Magpie Robin	<i>Copsychus saularis</i>		1	1					CW
Siberian Stonechat	<i>Saxicola maura</i>				1				CL
Daurian Redstart	<i>Phoenicurus aureus</i>				1				CL
Yellow-bellied Prinia	<i>Prinia flaviventris</i>			1				1	CW
Rufous-backed Shrike	<i>Lanius schach</i>	1	1		1				CW
Crested Myna	<i>Acridotheres cristatellus</i>			3			2	3	CW
Tree Sparrow	<i>Passer montanus</i>				2	1	3		CW
Total birds		13	4	13	12	7	10	9	
Total species		9	4	10	9	6	6	6	

Appendix 8D Bird species and their abundance recorded in cultivated lands in the Study Area (codes for commonness and distribution follows App. 8B)

Common names	Latin names	Aug 01	Sep 01	Oct 01	Nov 01	Dec 01	Jan 02	Feb 02	Commonness and distribution
Cattle Egret	<i>Bubulcus ibis</i>		1		1				CW
Chinese Pond Heron	<i>Ardeola bacchus</i>	1							CW
Spotted Dove	<i>Streptopelia chinensis</i>	2	1		2				CW
White Wagtail	<i>Motacilla alba</i>			1			1	2	CW
Yellow Wagtail	<i>Motacilla flava</i>				1	2	2		CL
Crested Bulbul	<i>Pycnonotus jocosus</i>					1		1	CW
Magpie Robin	<i>Copsychus saularis</i>			1					CW
Siberian Stonechat	<i>Saxicola maura</i>		1		1				CL
Black-necked Starling	<i>Sturnus nigricollis</i>	1		1					CW
Tree Sparrow	<i>Passer montanus</i>			5		1			CW
Total birds		4	3	8	5	4	3	3	
Total species		3	3	4	4	3	2	2	

Appendix 8E Bird species and their abundance recorded in orchard in the Study Area (codes for commonness and distribution follows App. 8B)

Common names	Latin names	Aug 01	Sep 01	Oct 01	Nov 01	Dec 01	Jan 02	Feb 02	Commonness and distribution
Rufous Turtle-dove	<i>Streptopelia orientalis</i>						2		CW
Spotted Dove	<i>Streptopelia chinensis</i>		1				1		CW
Olive-backed Pipit	<i>Anthus hodgsoni</i>				4				CW
White Wagtail	<i>Motacilla alba</i>				1				CW
Crested Bulbul	<i>Pycnonotus jocosus</i>	1				1		3	CW
Chinese Bulbul	<i>Pycnonotus sinensis</i>	1	1					2	CW
Magpie Robin	<i>Copsychus saularis</i>					1			CW
Black-necked Starling	<i>Sturnus nigricollis</i>	2					1		CW
Tree Sparrow	<i>Passer montanus</i>			2					CW
Total birds		4	2	2	5	2	4	5	
Total species		3	2	1	2	2	3	2	

Appendix 8F Bird species and their abundance recorded in grass-shrublands in the Study Area (codes for commonness and distribution follows App. 8B)

Common names	Latin names	Aug 01	Sep 01	Oct 01	Nov 01	Dec 01	Jan 02	Feb 02	Commonness and distribution
Spotted Dove	<i>Streptopelia chinensis</i>	1						1	CW
Olive-backed Pipit	<i>Anthus hodgsoni</i>		3			1			CW
Crested Bulbul	<i>Pycnonotus jocosus</i>			2		2			CW
Magpie Robin	<i>Copsychus saularis</i>				1				CW
Grey-backed Thrush	<i>Turdus hortulorum</i>					1			
Crested Myna	<i>Acridotheres cristatellus</i>				3				CW
Tree Sparrow	<i>Passer montanus</i>						2		CW
Total birds		1	3	2	4	4	2	1	
Total species		1	1	1	2	3	1	1	

Appendix 8G Bird species recorded in the Study Area during non-systematic surveys (codes for commonness and distribution follows App. 8B)

Common names	<i>Latin names</i>	Commonness and distribution
Night Heron	<i>Nycticorax nycticorax</i>	CL
Grey Heron	<i>Ardea cinerea</i>	CL
Buzzard	<i>Buteo buteo</i>	CL
Moorhen	<i>Gallinula chloropus</i>	CL
Grey-backed Thrush	<i>Turdus hortulorum</i>	CL
Jungle Crow	<i>Corvus macrorhynchus</i>	CW
Spotted Munia	<i>Lonchura punctulata</i>	CL
Masked Bunting	<i>Emberiza spodocephala</i>	CW

Appendix 8H Bird species recorded in the Study Area during all types of sampling over the entire study period (codes for commonness and distribution follows App. 8B)

Serial No.	Common names	Latin names	Commonness and distribution
1	Grey Heron*	<i>Ardea cinerea</i>	CL
2	Chinese Pond Heron*	<i>Ardeola bacchus</i>	CW
3	Cattle Egret*	<i>Bubulcus ibis</i>	CW
4	Great Egret*	<i>Casmerodius albus</i>	CL
5	Little Egret*	<i>Egretta garzetta</i>	CW
6	Yellow Bittern*	<i>Ixobrychus sinensis</i>	CL
7	Night Heron*	<i>Nycticorax nycticorax</i>	CL
8	Buzzard	<i>Buteo buteo</i>	CL
9	Common Sandpiper*	<i>Actitis hypoleucos</i>	CW
10	Green Sandpiper*	<i>Tringa ochropus</i>	CW
11	White-breasted Waterhen*	<i>Amaurornis phoenicurus</i>	CW
12	Moorhen*	<i>Gallinula chloropus</i>	CL
13	Common Kingfisher*	<i>Alcedo atthis</i>	CW
14	White-breasted Kingfisher*	<i>Amaurornis phoenicurus</i>	CW
15	Crested Bulbul	<i>Pycnonotus jocosus</i>	CW
16	Chinese Bulbul	<i>Pycnonotus sinensis</i>	CW
17	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	CW
18	Spotted Dove	<i>Streptopelia chinensis</i>	CW
19	Rufous Turtle-dove	<i>Streptopelia orientalis</i>	CW
20	Olive-backed Pipit	<i>Anthus hodgsoni</i>	CW
21	White Wagtail	<i>Motacilla alba</i>	CW
22	Yellow Wagtail*	<i>Motacilla flava</i>	CL
23	Magpie Robin	<i>Copsychus saularis</i>	CW
24	Daurian Redstart	<i>Phoenicurus auroreus</i>	CL
25	Siberian Stonechat*	<i>Saxicola maura</i>	CL
26	Grey-backed Thrush	<i>Turdus hortulorum</i>	CL
27	Rufous-backed Shrike	<i>Lanius schach</i>	CW
28	Tree Sparrow	<i>Passer montanus</i>	CW
29	Crested Myna	<i>Acridotheres cristatellus</i>	CW
30	Black-necked Starling	<i>Sturnus nigricollis</i>	CW
31	Jungle Crow	<i>Corvus macrorhynchus</i>	CW
32	Spotted Munia	<i>Lonchura punctulata</i>	CL
33	Masked Bunting	<i>Emberiza spodocephala</i>	CW

Commonness and distribution: CW = common and widespread, CL = common/uncommon and localised (Viney *et al.* 1996)

* = wetland dependent

Appendix 8I Butterfly species and their abundance recorded in the Study Area during wet and dry seasons

Common names	Latin names	CL	FP	W	Commonness
Butterflies					
Blue Glassy Tiger	<i>Danaus similis</i>	2			VC
Great Eggfly	<i>Hypolimnas bolina</i>		2	1	C
Grey Pansy	<i>Junonia atlites</i>	1		1	C
Peacock Pansy	<i>Junonia almana</i>	1			C
Common Sailor	<i>Phaedyma hylas</i>		1		VC
Paris Peacock	<i>Papilio paris</i>			1	VC
Common Grass Yellow	<i>Eurema hecabe</i>	4			VC
Dark Brand bush Brown	<i>Mycalesis mineus</i>			1	VC
Total no. of individuals		8	3	4	
Total no. of species		4	2	4	

CL = cultivated lands, FP = fishponds, W = woodland

Commonness: C = common, VC = very common (Walther 1997).

Appendix 8J Dragonfly species and their abundance recorded in the Study Area during wet and dry seasons

Latin names	CL	FP	S	Commonness
<i>Ischnura senegalensis</i>		3		A
<i>Anax guttatus</i>		1		C
<i>Orthetrum sabina</i>	2		1	A
<i>Brachythemis contaminata</i>		2		A
<i>Pantala flavescens</i>	2			A
<i>Crocothemis servilia</i>		1	1	C
<i>Neurothemis tullia</i>	1			FC
<i>Rhyothemis variegata</i>	1			C
Total no. of individuals	6	7	2	
Total no. of species	4	4	2	

CL = cultivated lands, FP = fishponds, S = stream

Commonness: A = abundant, C = common, FC = fairly common (Wilson 1997).