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A stocktake of the number and size range of flora and fauna species of Magela Creek, Alligator Rivers Region, NT

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Caroline Camilleri

1 Introduction

The Magela Creek and associated wetlands is located in the Alligator Rivers Region, which includes World Heritage Area Kakadu, approximately 200 km east of Darwin Northern Territory. Research, monitoring and management strategies in the most part have been directed towards the effects of uranium mining and milling at the Ranger minesite, on animals, plants and people living downstream of the mine. Protection of the rich diversity of flora and fauna of Magela Creek, in World Heritage Area Kakadu is a high priority.

The most susceptible area for possible impact from the release of waste water from mining operations, is the wetland ecosystem downstream of the minesite. Magela Creek has been intensively studied for almost 30 years, and represents a unique long-term time-series of freshwater aquatic biological and ecological data.

The purpose of a stocktake of aquatic species and their sizes in the Magela Creek system is to provide life-history data for ecological risk assessment at population and community levels. Risk assessments for ecosystems are generally of two kinds: (1) for structured single populations, and (2) food chains. In both, bioassay results can be linked to population and/or community dynamics using life history knowledge. Structured population models can incorporate: specific dose-response survival and/or fecundity rates for each age/stage class; account for density dependence of selected ages/stages; and, ultimately, summarise population-level responses to toxicants through estimates of population growth rate or extinction risk. Food chain or web models may encompass the effects of toxicant kinetics or bioaccumulation factors incorporating: select dose-response and predator-prey functions; and simulating ecosystem dynamics and estimating the risk of adverse events. Population-level ecotoxicological risk assessments for environmental contaminants use data from standard laboratory bioassays. These data are incorporated into the parameters of a population model, then a risk assessment is performed analysing population-level differences between control and impacted samples. Bioassays on individuals are used to assess the impact of toxins on natural systems, and are usually expressed in terms of individual-level assessment endpoints such as growth, survivorship and fecundity. Stage-structured single-population models and food chain models are therefore critical in predicting population-level effects of toxicants on individuals.

Typically however, there are large gaps in knowledge on the demography of species within ecological communities for any site in the world. Fortunately, life history theory is central to demography and can be used to predict the dynamics of populations or individual-level responses to toxicants. A large number of empirically based relationships describe biological rates as simple functions of body size, such as maximum rate of population increase, animal density, physiology, morphology and sensitivity to toxicants. In the absence of demographic or physiological information, body size relations provide the most extensive and powerful

generalisations, and can be used to fill gaps in knowledge. Additionally, this report gathers together for the first time, a comprehensive list identifying to species level all available size class information on the aquatic organisms living in or closely linked and associated with Magela Creek.

2 Description and identification of major groups of aquatic organisms of Magela Creek

2.1 Introduction

The organisms have been separated into major groups based on general biological characteristics, and description and identification of groups in the literature. An Excel spreadsheet has been collated with 10 worksheets containing each grouping or species. Species are listed in alphabetical order, giving genus, species and common names where available. Key references are provided in the following descriptions. With the continuing development of SSD Explorer, this data set will be entered and available according to information in the users guide to SSD Explorer.

2.2 Algae (including Cyanobacteria)

Broady (1984) investigated the diversity and abundance of cyanobacteria in aquatic and non-aquatic habitats in billabongs and the floodplain of Magela Creek. Cyanobacteria are reported to be common in areas which remain inundated throughout the year, but also are prevalent in areas that become highly desiccated during the Dry season, such as floodplains. A further 15 species are identified and measured from this study in addition to the species described by Ling and Tyler (1986).

Ling and Tyler (1986) identify and describe 479 species of freshwater algae in Magela Creek. The composition of algae represents high floristic diversity common to the tropics. There is a strong affinity with the flora of South-East Asia. Measurements are given by Ling and Tyler (1986) and are recorded as length, width, and diameter where available.

2.3 Diatoms

Thomas (1983) describes 146 species of diatoms of the Magela Creek system. Size data for this study were obtained by measuring all of the available identifying photographs, using a mm ruler.

2.4 Vegetation

The vegetation of Magela Creek was first described as far back as Story (1969). The plant ecosystem includes approximately four general habitats (Finlayson et al 1989); seasonally inundated plain; seasonally inundated fringe zone; billabong; and permanent swamp. Of the 219 species identified associated with the Magela Creek ecosystem, 82 species are classified as aquatic and denoted by the symbol A in the workbook for algae. The remaining 137 species have been classified as terrestrial according to Denny (1985) '…pteridophytes, charophytes and spermatophytes with vegetative parts that are permanently or seasonally submerged in or emergent from, or float on the water surface'.

2.5 Microinvertebrates

Microcrustaceans are an important component of the aquatic ecosystem in Magela Creek. Trophic interactions include feeding on detritus, bacteria and phytoplankton, while also forming a significant portion of the diet of numerous fish species including larval and juvenile life stages (Bishop 1980, 2001). Sixty one species of microinvertebrates are identified from the Magela Creek catchment lowlands and floodplains (Julli 1986). The majority of species were found among aquatic macrophyte weedbeds. Measurements of body size were taken using a mm ruler from drawings where available.

2.6 Macroinvertebrates

At the time of preparing this report, few measurements of macroinvertebrates were available for Magela Creek species. The three groups with available body size data for some genera are Odonata (Hawking 1993), Ephemeroptera (Suter 1992) and Macrobrachium (Short 1998). Further work is required on the macroinvertebrates to bring the voucher collection up to date, and actually measure species where no information is available at present.

2.7 Fish

Thirty-four species of fish are known to occur in Magela Creek, including endemic species (*Pingalla midgleyi* Midgely's grunter and *Craterocephalus marianae* Mariana's hardyhead) (Gardner et al 2002). The structure of the fish communities is described in Bishop et al (1986, 1990), and the feeding, breeding and migration habits in Bishop et al (1986, 1990, 2001). Fish species are listed in the spreadsheet with minimum and maximum length measurements given where available for samples collected in Magela Creek.

2.8 Amphibians

Twenty four species of frogs are found in the Magela Creek floodplain system (Gardner et al 2002). Several species are endemic to upland rocky escarpment habitats in the Top End and Kimberley regions, and are listed separately in the amphibian worksheet. The other species inhabit wetland and floodplain areas across northern Australia. Male and female body sizes are given where available, as many species display sexual dimorphism (Barker et al 1995).

2.9 Reptiles

The reptile fauna of Magela Creek is reported as one of the most diverse in Australia (Gardner et al 2002). Measurements are given as standard snout-vent lengths where available. The large reptiles present in aquatic habitats are noted in the spreadsheet by an asterisk.

2.10 Birds

The Magela Creek ecosystem supports a diverse range of waterbird species. Permanent waterbodies such as billabongs and swamps provide important Dry season habitat for waterbirds. Fifty one species of common and abundant waterbirds are identified with measurements of body size given where available.

2.11 Mammals

Thirty six species of mammals are identified from the Magela Creek system. Measurements are given of minimum and maximum body lengths for males and females where available (Gardner et al 2002; Strahan 1983).

3 Summary

The following table summarises the major species groups, total number of species within each group, and total number of aquatic species. Aquatic species are defined as living in or on water, or having part or whole of lifecycle taking place in water.

Table 1 Summary of the groups, total number of species and number of aquatic species in the Magela Creek system

Major groups of species	Total number of species	Total number of aquatic species
Algae (including Cyanobacteria)	494	494
Diatoms	146	146
Vegetation	219	84
Microinvertebrates	139	139
Macroinvertebrates	72	72
Fish	34	34
Amphibians	25	25
Reptiles	78	13
Birds	51	51
Mammals	44	1
Total	1302	1059

4 References

Barker J, Grigg GC & Tyler MJ 1995. *A field guide to Australian frogs*. Surrey Beatty & Sons Pty Limited, Chipping Norton, Australia.

Bishop KA, Allen SA, Pollard DA & Cook MG 1980. Ecological studies on the fishes of the Alligator Rivers Region, NT (3 parts). Open file record 23, Supervising Scientist for the Alligator Rivers Region, Canberra. Unpublished paper.

Bishop KA, Allen SA, Pollard DA & Cook MG 1986. *Ecological studies on the freshwater fishes of the Alligator Rivers Region, Northern Territory. Volume I Outline of the study, summary, conclusions and recommendations*. Research report 4 (i), Supervising Scientist for the Alligator Rivers Region, AGPS, Canberra.

Bishop KA, Allen SA, Pollard DA & Cook MG 1990. *Ecological studies on the freshwater fishes of the Alligator Rivers Region, Northern Territory. Volume II Synecology*. Research report 4 (ii), Supervising Scientist for the Alligator Rivers Region, AGPS, Canberra.

Bishop KA, Allen SA, Pollard DA & Cook MG 2001. *Ecological studies on the freshwater fishes of the Alligator Rivers Region, Northern Territory: Autecology*. Supervising Scientist Report 145, Supervising Scientist, Darwin.

Broady PA 1984. A preliminary investigation of the cyanobacteria (blue-green algae) of the Magela Creek system and nearby sites, Northern Territory. School of Botany, University of Melbourne, Parkville, Victoria. Unpublished paper.

Cogger HG 1996. *Reptiles and amphibians of Australia*. Reed Books Australia Pty Ltd, Melbourne.

Cowie IE & Finlayson CM 1986. *Plants of the Alligator Rivers Region, Northern Territory.* Technical memorandum 17, Supervising Scientist for the Alligator Rivers Region, AGPS, Canberra.

Cranston PS 1991. Taxonomy of the Chironomidae of the Alligator Rivers Region. Open file record 82, Supervising Scientist for the Alligator Rivers Region, Canberra. Unpublished paper.

CSIRO (Division of Entomology) 1991. *The insects of Australia*. Melbourne University Press, Melbourne.

Denny P 1985. Wetland vegetation and associated plant life-forms, in *The ecology and management of African wetland vegetation,* ed P Denny, Dr Junk Publishers, Dordrecht, 1–18.

Finlayson CM, Bailey BJ & Cowie ID 1989. *Macrophyte vegetation of the Magela Creek flood plain, Alligator Rivers Region, Northern Territory*. Research report 5, Supervising Scientist for the Alligator Rivers Region, AGPS, Canberra.

Franklin N, Stauber J, Markich S & Lim R 1998. *A new tropical algal test to assess the toxicity of metals in freshwaters*. Supervising Scientist Report 133, Supervising Scientist, Canberra.

Gardner S, Finlayson CM & Pidgeon RWJ (eds) 2002. *Description and literature review of the flora and vertebrate fauna of Magela Creek, Alligator Rivers Region, northern Australia*. Scientist Report 169, Supervising Scientist, Darwin NT.

Hawking J 1993. A preliminary guide to the identification of dragonfly larvae (Odonata) from the Alligator Rivers region of the Northern Territory. Open file record 102, Supervising Scientist for the Alligator Rivers Region, Canberra. Unpublished paper.

Hawking JH & Smith FJ 1997. *Colour guide to invertebrates of Australian inland waters.* Co-operative Research Centre for Freshwater Ecology, Albury NSW.

Hyne RV, Rippon GD, Hunt SM & Brown GH 1996. *Procedures for the biological toxicity testing of mine waste waters using freshwater organisms*. Supervising Scientist Report 110, Supervising Scientist, Canberra.

Julli ME 1986. *The taxonomy and seasonal population dynamics of some Magela Creek flood plain microcrustaceans (Cladocera and Copepoda).* Technical memorandum 18, Supervising Scientist for the Alligator Rivers Region, AGPS, Canberra.

Koste W 1978. *Rotaria Die Rädertiere Mitteleuropas*. 2 volumes. Borntraeger Stuttgart.

Ling HU & Tyler PA 1986. *A limnological survey of the Alligator Rivers Region. Volume II Freshwater algae, exclusive of diatoms*. Research report 3 (ii), Supervising Scientist for the Alligator Rivers Region, AGPS, Canberra.

Markich SJ & Camilleri C 1997. *Investigation of metal toxicity to tropical biota: Recommendations for revision of the Australian water quality guidelines*. Supervising Scientist Report 127, Supervising Scientist, Canberra.

OECD (Organisation for Economic Co-operation and Development) 1999. OECD Guidelines for testing of chemicals. Draft proposal for updating Guideline 202. *Daphnia* sp., Acute Immobilisation Test. p. 1–8.

Riethmuller N, Hogan AC, Koch A, Turley C & Camilleri C 2003. *Ecotoxicological testing protocols for assessment of risks and threats to tropical Australian wetlands*. Supervising Scientist Report 173, Supervising Scientist, Darwin NT.

Short JW 1998. Identification guide to Australian *Macrobracium*. Queensland Museum.

Story R 1969. Vegetation of the Adelaide-Alligator area. In *Lands of the Adelaide-Alligator area, Northern Territory*. Land research series No. 25, Commonwealth Scientific and Industrial Organisation, Australia, 114–130.

Strahan R (ed) 1983. *The Australian Museum Complete Book of Australian Mammals*. Angus & Robertson Publishers, Sydney.

Suter PJ 1992. Taxonomic key to the Ephemeroptera (mayflies) of the Alligator Rivers Region. Open file record 96, Supervising Scientist for the Alligator Rivers Region, Canberra. Unpublished paper.

Thomas DP 1983. *A limnological survey of the Alligator Rivers Region. Volume I Diatoms (Bacillariophyceae) of the Region*. Research report 3 (i), Supervising Scientist for the Alligator Rivers Region, AGPS, Canberra.

van Dam R 2000. Derivation of a site-specific water quality trigger value for uranium in Magela Creek. Internal Report 350, Supervising Scientist, Darwin. Unpublished paper.

Walden D & Pidgeon B 1998. *Freshwater fishes of Kakadu National Park*. Supervising Scientist, Canberra.

Wells A 1991. A guide to the Caddisflies (Trichoptera) of the Alligator Rivers Region, Northern Territory. Open file record 84, Supervising Scientist for the Alligator Rivers Region, Canberra. Unpublished paper.

Williams WD 1995. *Australian freshwater Life*. MacMillan Education Australia Pty Ltd, South Melbourne.

Appendix 1 Magela Creek algae

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
Chaetophoraceae	*Stigeoclonium*	*flagelliferum*	35	43	10	12		
Chlorococcaceae	*Tetraedon*	*gracile*					31	54
	Tetraedon	*hastatum*					36	40
	Tetraedon	*limneticum*					32	40
	Tetraedon	*regulare*					20	50
	Tetraedon	*victoriae*		65		23		
	Tetraedon	sp.						70
Chaetosphaeridiaceae	*Chaetosphaeridium*	*globosum*	14	17	11	14		
Dictyosphaeriaceae	*Botryococcus*	*braunii*	6	14	3	8		
	Dictyosphaerium	*pulchellum*					4	7
	Dictyosphaerium	*tetrachotomum*	7	8	5	6		
	Dimorphococcus	*lunatus*	7	15	5	7		
Hydrodictyaceae	*Pediastrum*	*araneosum*						15
	Pediastrum	*duplex*					10	12
Oocystaceae	*Ankistrodesmus*	*falcatus*	20	25	1	2		
	Chotatella	*subsala*		8		14		
	Kirchneriella	*lunaris*	9	14	4	6		
	Kirchneriella	*obesa*	6	10	3	6		
	Nephrocytium	*lunatum*	14	20	4	7		
	Oocystis	*borgei*	10	16	7	11		
	Selenastrum	*bibraianum*	20	24	5	7		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Selenastrum	*gracile*	3	4	7	20		
	Selenastrum	*westii*					2.5	3
	Treubaria	*triappendiculata*	9	10	48	51		
Radiococcaceae	*Coenochloris*	*pyrenoidosa*					7	9
Scenedesmaceae	*Actinastrum*	*gracillimum*		15		3		
	Actinastrum	*hantzschii*		23		3		
	Coelastrum	*intermedium*					8	12
	Crucigenia	*quadrata*						4
	Crucigenia	sp.	5	7	3	4		
	Scenedesmus	*bijuga*	10	11		6		
	Scenedesmus	*brasiliensis*	23	27	7	8		
	Scenedesmus	*perforatus*	14	21	4	7		
	Scenedesmus	*quadricauda*	20	23		7		
	Scenedesmus	sp.	14	16	8	9		
	Tetrallantos	*lagerheimii*	9	10	3	4		
Oedogoniaceae	*Bulbochaete*	sp.2		30				
	Oedogonium	*pusillum*	22	30		4		
	Oedogonium	*undulatum*		65	14	16		
Gloeocystaceae	*Gloeocystis*	*gigas*					11	18
Tetrasporaceae	*Schizochlamys*	*gelatinosa*					11	12
	Schizochlamys	sp.					17	19
Ulotrichaceae	*Geminella*	*ordinata*	4.5	5.5	3	4		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Geminella	sp.	4	6	10	12		
	Radiofilium	*irregulare*					7	8
Pyramimonaceae	*Pyramimonas*	sp.		18		8		
Volvocaceae	*Chlamydomonas*	*bicocca*	12	19	17	20		
	Eudorina	*elegans*					9	15
	Pandorina	*morum*		7		5		
	Pandorina	sp.					8	10
	Volvox	*aureus*					5	7
Desmideaceae	*Actinotaenium*	*capax*		69		46		
	Actinotaenium	*cucurbita*			28		17	
	Actinotaenium	*cucurbitinum*		64		25		
	Actinotaenium	*diplosporum*		63		27		
	Actinotaenium	*elongatum*	169	181	45	54		
	Arthrodesmus	*octocornis*	17	42	15	38		
	Bambusina	*brebissonii*	25	29	15	16		
	Bambusina	*sphaerospora*						
	Closterium	*acerosum*	342	410	35	36		
	Closterium	*biclavatum*		296		6		
	Closterium	*cynthia*		58		9		
	Closterium	*dianae*		220		25		
	Closterium	*dianae* var. *arcuatum*		210		20		
	Closterium	*dianae* var. *brevius*		148		22		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Closterium	*incurvum*		47		8		
	Closterium	*infractum*						
	Closterium	*kuetzingii*		515		18		
	Closterium	*leibleinii*		76		14		
	Closterium	*libellula* var. *intemedium*		178		26		
	Closterium	*libellula* var. *interruptum*	100	162	19	23		
	Closterium	*lunula*	542	583	106	113		
	Closterium	*mnematodes*	116	237	14	35		
	Closterium	*parvulum*	80	125	9	15		
	Closterium	*parvulum* var. *tortum*		92		5		
	Closterium	*porrectum* var. *angustatum*		120		20		
	Closterium	*pronum*	98	287	3	5		
	Closterium	*ralfsii* var. *hybridum*	520	548	28	32		
	Closterium	*rectimarginatum*		168		20		
	Closterium	*semicirculare*		171		27		
	Closterium	*striolatum*	239	300	25	27		
	Closterium	*turgidium* forma	476	648	39	41		
	Closterium	sp. 1	102	110	26	27		
	Closterium	sp. 2	102	123	8	9		
	Cosmarium	*amoenum*	47	59	29	32		
	Cosmarium	*amoenum* var. *mediolaeve*		43		26		
	Cosmarium	*askenasyi*	54	70	79	187		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Cosmarium	*askenasyi* forma		131	76	78		
	Cosmarium	*binum*		64		45		
	Cosmarium	*bioculatum*		19.5		17		
	Cosmarium	*ceylanicum*		31		25		
	Cosmarium	*connatum*		74	59	62		
	Cosmarium	*contractiforme*		47	31	33		
	Cosmarium	*contractum*		38	25	27		
	Cosmarium	*contractum* var. *minutum*		13	20	10	19	
	Cosmarium	*contractum* var. *pachydermum*			26		20	
	Cosmarium	*cucumis*		142	80	83		
	Cosmarium	*denticulatum*		95		130		
	Cosmarium	*depressum*	23	25	22	25		
	Cosmarium	*exasperatum*		35		37		
	Cosmarium	*excavatum*		37		21		
	Cosmarium	*favum*		70		68		
	Cosmarium	*geminatum*		25	27	29		
	Cosmarium	*glyptodermum*		90		54		
	Cosmarium	*granatum*		27		20		
	Cosmarium	*javanicum*	150	154	87	95		
	Cosmarium	*lundellii* var. *ellipticum*		64		56		
	Cosmarium	*moniliforme*	33	35		17		
	Cosmarium	*moniliforme* var. *ellipticum*	44	47	24	30		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Cosmarium	*moniliforme* var. *indentatum*		39		21		
	Cosmarium	*moniliforme* var. *panduriforme*		20	13	14		
	Cosmarium	*norimbergense*	10	11.5	9	11		
	Cosmarium	*nudum*	47	51	50	52		
	Cosmarium	*obsoletum*		58		54		
	Cosmarium	*obsoletum* forma		71		62		
	Cosmarium	*obsoletum* var. *sitvense*	40	59	48	72		
	Cosmarium	*pachydermum*		90	64	67		
	Cosmarium	*perminutum* var. *australe*	13	16	8	10		
	Cosmarium	*pseudophaseolus* var. *tithophoroides*	22	26	16	19		
	Cosmarium	*pseudopyramidatum*		59		37		
	Cosmarium	*pseudoscenedesmus*	23	26	33	37		
	Cosmarium	*punctulatum*	28	32	29	30		
	Cosmarium	*quadrifarium*		49		37		
	Cosmarium	*quadrifarium* var. *gemmulatum*		42		34		
	Cosmarium	*retusiforme*		27		22		
	Cosmarium	*securiforme*	138	145	138	150		
	Cosmarium	*spinuliferum*		35	32	33		
	Cosmarium	*subspeciosum*		46	31	35		
	Cosmarium	*subtumidum* var. *pachydermum*	31	40	25	33		
	Cosmarium	*tjibenongense minus*		30		17		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Cosmarium	*trilobulatum* var. *depressum*		15		11		
	Cosmarium	*zonatum*	48	52	19	21		
	Cosmarium	sp. 1	74	82	33	36		
	Cosmarium	sp. 2	57	65	35	41		
	Cosmarium	sp. 3	26	31	12	14		
	Cosmarium	sp.4	16	18	21	28		
	Desmidium	*aequale*	19	24	30	32		
	Desmidium	*aptogonum*	20	28	27	30		
	Desmidium	*aptogonum* var. *tetragonum*	18	20		32		
	Desmidium	*baileyi*		16	20	21		
	Desmidium	*baileyi* fa. *Tetragonum*		14		20		
	Desmidium	*coarctatum*	40	43	40	42		
	Desmidium	*suboccidentale*		15		26		
	Desmidium	*swartzii*		13	40	43		
	Desmidium	*swartzii* forma		18		50		
	Docidium	*baculum*		168		11		
	Docidium	*baculum* var. *inflatum*		141		15		
	Euastrum	*ansatum*		114	32	35		
	Euastrum	*ansatum var. triporum*	66	84	32	44		
	Euastrum	*asperum*		96	50	52		
	Euastrum	*borgeanum*		75		41		
	Euastrum	*denticulatum* var. *quadrifarium*		23		18		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Euastrum	*denticulatum* var. *quadfarium* fa. *incisum*		33		23		
	Euastrum	*didelta*		137		77		
	Euastrum	*didetla* var. *bengalicum*	120	126	55	72		
	Euastrum	*didelta* var. *bengalicum* fa. *minus*	84	86	42	44		
	Euastrum	*divergens*		60	56	60		
	Euastrum	*divergens* var. *rhodesiense* fa. *coronulum*		45		47		
	Euastrum	*intermedium* var. *poriferum*		66		41		
	Euastrum	*intermedium* var. *speciosum*		65	51	53		
	Euastrum	*Latipediforme*		110		144		
	Euastrum	*longicolle* var. *capitatum*		110		38		
	Euastrum	*longicolle* var. *capitatum* fa. *minus*	64	73	27	35		
	Euastrum	*moebii*		65	90	92		
	Euastrum	*moebii* var. *burmense*		103	98	102		
	Euastrum	*moebii* var. *diplocanthylum*		105		108		
	Euastrum	*moebii* var. *insolitum*	93	102	100	104		
	Euastrum	*moebii* var. *tetrachastriforme*	95	101	85	90		
	Euastrum	*moebii* var. *tetrachastriforme* forma	84	89	84	86		
	Euastrum	*obesum* var. *tetmemoroides*	124	131	34	43		
	Euastrum	*praemorsum*		61		37		
	Euastrum	*pulcherrimum*		42		27		
	Euastrum	*pulcherrimum* var. *menggalense*		62		37		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Euastrum	*sinuosum* var. *subjenneri*	61	66	33	38		
	Euastrum	*spinulosum* var. *burmense*		65		57		
	Euastrum	*validum*		25		17		
	Euastrum	sp. 1	83	91	25	33		
	Euastrum	sp. 2		59		30		
	Euastrum	sp. 3		78		41		
	Groenbladia	*neglecta*	28	32		10		
	Hyalotheca	*dissiliens* var. *hians*	15	18	13	14		
	Hyalotheca	*mucosa* var. *minor*	13	18		10		
	Hyalotheca	*undulata*	11	13	8	9		
	Ichthyodontum	*sachlanii*		162		23		
	Micrasterias	*alata*	167	310	230	260		
	Micrasterias	*alata forma*	141	195	180			
	Micrasterias	*alata* var. *parallela*	140	185		186		
	Micrasterias	*anomala* var. *bifurcata*	252	346	135	238		
	Micrasterias	*ceratofera*	163	249	88	165		
	Micrasterias	*decemdentata* var. *intermedia*		102		107		
	Micrasterias	*doveri*	404	425	245	258		
	Micrasterias	*foliaceae*	64	81		79		
	Micrasterias	*foliaceae* var. *ornata*	65	88		88		
	Micrasterias	*lux*	180	195	167	193		
	Micrasterias	*lux* var. *longibracchiata*	300	355	270	335		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Micrasterias	*mahabuleshwarensis* var. *reducta*	110	148		117		
	Micrasterias	*mahabuleshwarensis* var. *surculifera*	113	152		150		
	Micrasterias	*mahabuleshwarensis* var. *tetradonta*	106	137		95		
	Micrasterias	*pinnatifida*		67	75	76		
	Micrasterias	*radians*		65		109		
	Micrasterias	*radiosa* var. *evoluta*	330	378	293	360		
	Micrasterias	*radiosa* var. *ornata* fa. *Aculeata*		190		184		
	Micrasterias	*suboblonga* var. *australis*		46		25		
	Micrasterias	*thomasiana* var. *evoluta*		244		195		
	Micrasterias	*thomasiana* var. *notata*		272		230		
	Micrasterias	*thomasiana* var. *torneensis*		91		158		
	Micrasterias	*torreyi* var. *crameri*	262	376	240	334		
	Micrasterias	*torreyi var. curvata*	365	370	270	275		
	Micrasterias	*tropica* var. *polonica*	102	178	94	129		
	Micrasterias	*truncata*		61		71		
	Micrasterias	*zeylanica*		40		75		
	Onychonema	*laeve*	20	22	27	29		
	Onychonema	*laeve* var. *constrictum*	19	20	20	23		
	Onychonema	*laeve* var. *latum*		19	27	29		
	Onychonema	*laeve* var. *micracanthum*		14		18		
	Penium	*cylindrus*	24	50	7	9		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Penium	*spirostriolatiforme*	192	308		10		
	Penium	sp.1		40		12		
	Penium	sp. 2		188		60		
	Phymatodocis	*irregularis* var. *intermedia*	30	32	55	60		
	Pleurotaenium	*burmense*	510	630	41	45		
	Pleurotaenium	*burmense* var. *curtum*		294		25		
	Pleurotaenium	*coronatum*		222		28		
	Pleurotaenium	*coroniferum* var. *multinodosum*	384	434	34	37		
	Pleurotaenium	*coroniferum* var. *multinodosum* forma	470	506	32	36		
	Pleurotaenium	*ehrenbergii*	117	149	21	24		
	Pleurotaenium	*ehrenbergii* var. *crenulatum*		270		34		
	Pleurotaenium	*ehrenbergii* var. *elongatum*		324		22		
	Pleurotaenium	*ehrenbergii* var. *quantillum*		97		12		
	Pleurotaenium	*ehrenbergii* var. *undulatum*		275		31		
	Pleurotaenium	*elatum*	293	457	41	63		
	Pleurotaenium	*excelsum*		157		15		
	Pleurotaenium	*excelsum* var. *rhomphaeum*		148		11		
	Pleurotaenium	*kayei*		132		58		
	Pleurotaenium	*minutum*		123	12	13		
	Pleurotaenium	*minutum* var. *excavatum*		204		8.5		
	Pleurotaenium	*minutum* var. *latum*		130		17		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Pleurotaenium	*nodosum*		272		101		
	Pleurotaenium	*nodosum* var. *borgei*		114		44		
	Pleurotaenium	*nodosum* var. *gutwinskii*	373	397	77	92		
	Pleurotaenium	*ovatum* var. *inermius*		360	141	144		
	Pleurotaenium	*ovatum* var. *tumidum*		300	120	130		
	Pleurotaenium	*sceptrum*	178	197	7	8		
	Pleurotaenium	*subcoronulatum*	184	354	20	58		
	Pleurotaenium	*trabecula* var. *elongatum*		287		23		
	Pleurotaenium	*verrucosum*		178		34		
	Pleurotaenium	sp.		275		38		
	Sphaerozosma	*granulatum*	11	12	11	12.5		
	Sphaerozosma	sp.1	11	12	9	11		
	Sphaerozosma	sp.3		16	12	14		
	Spinoclosterium	*cuspidatum*	114	132	12	17		
	Spondylosium	*nitens* var. *triangulare* fa. *javanicum*	30	31	30	32		
	Staurastrum	*acestrophorum*	24	27	18	19		
	Staurastrum	*anisacanthum*		22		66		
	Staurastrum	*avicula*		35		33		
	Staurastrum	*bifidum*	28	33	31	35		
	Staurastrum	*boergesenii* var. *gracilis*		28	82	94		
	Staurastrum	*botanense*	15	18	25	27		
	Staurastrum	*cerastes* var. *pulchrum*	45	47	55	61		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Staurastrum	*ceylanicum*	18	20	24	26		
	Staurastrum	*clepsydra* var. *minimum*		19		23		
	Staurastrum	*clevei*		16.5		21		
	Staurastrum	*coarctatum* var. *horii*		15		16		
	Staurastrum	*coarctatum* var. *subcurtum*		19		16		
	Staurastrum	*columbetoides* var. *intermedium*	50	80	13	14		
	Staurastrum	*distentum*	24	30		40		
	Staurastrum	*elegans*	52	154	131	137		
	Staurastrum	*emaciatum*		29		26		
	Staurastrum	*ensiferum*	38	60	35	67		
	Staurastrum	*exporrectum*	30	65		14		
	Staurastrum	*floriferum*	24	32	37	60		
	Staurastrum	*forficulatum*	27	47	30	58		
	Staurastrum	*freemanii*	30	60	32	72		
	Staurastrum	*galeatum*	18	22	29	33		
	Staurastrum	*gladiosum*	37	45	35	50		
	Staurastrum	*gracile* fa. *kriegeri*		22		33		
	Staurastrum	*gracile* var. *elongatum*		27	64	76		
	Staurastrum	*hypacanthum*	48		71			
	Staurastrum	*inconspicuum*	13	16		19		
	Staurastrum	*indentatum*	35	42	58	78		
	Staurastrum	*laeve*		15		20		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Staurastrum	*leptocladum*	40	43	96	105		
	Staurastrum	*longebrachiatum*	38	44	70	87		
	Staurastrum	*longebrachiatum* forma	28	34	50	68		
	Staurastrum	*longebrachiatum* var. *australe*		39		82		
	Staurastrum	*longispinum*		89	83	92		
	Staurastrum	*multinodulosum*		22	68	73		
	Staurastrum	*muticum*		38		32		
	Staurastrum	*nodulosum*		24		54		
	Staurastrum	*orbiculare* var. *denticulatum*	40	52	36	46		
	Staurastrum	*orbiculare* var. *denticulatum* forma	44	53	41	50		
	Staurastrum	*orbiculare* var. *denticulatum* fa. *minor*	31	34	30	35		
	Staurastrum	*orbiculare* var. *protractum*	20	38	20	38		
	Staurastrum	*pachyrhynchum*		40	38	41		
	Staurastrum	*pentacerum* fa. *curvatum*	42	45	50	52		
	Staurastrum	*peristephes*		39	68	72		
	Staurastrum	*pinnatum* var. *subpinnatum*		29	38	45		
	Staurastrum	*pinnatum* var. *subpinnatum* fa. *robustum*	32	35	53	60		
	Staurastrum	*pseudosebaldi*		58	100	140		
	Staurastrum	*pseudotetracerum*	13	21		29		
	Staurastrum	*rectangulare* var. *verrucosum*	32	54		31		
	Staurastrum	*retusum*	28	29	28	31		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Staurastrum	*retusum* var.*boreale*		15		16		
	Staurastrum	*rosei* var.*elongatum*	14	60		31		
	Staurastrum	*sagittarium*	29	33	22	26		
	Staurastrum	*sagittarium* var.*longispinum*	30	35	23	25		
	Staurastrum	*saltans* var*. sumatranum* forma 1	33	37	62	66		
	Staurastrum	*saltans* var*. sumatranum* forma 2	37	46	71	76		
	Staurastrum	*saltans* var*. polycharax* forma 3	32	43	53	59		
	Staurastrum	*saltans* forma 4	39	61	53	56		
	Staurastrum	*saltans* forma 5	43	53	53	81		
	Staurastrum	*scottii*		142	146	195		
	Staurastrum	*sexangulare* forma 2	25	56	47	73		
	Staurastrum	*sexangulare v*ar. *asperum*	48	84		95		
	Staurastrum	*sexangulare* var.*subglabrum*	27	43	59	82		
	Staurastrum	*sonthalianum*	35	37	52	57		
	Staurastrum	*spinipendens*		27		64		
	Staurastrum	*subgracillimum*		11	26	28		
	Staurastrum	*subgracillimum* var*. tortum*	11	13		40		
	Staurastrum	*submanfeldtii* forma 1	38	58	50	86		
	Staurastrum	*submanfeldtii* forma 2	32	34	58	67		
	Staurastrum	*tangaroaii*	21	27	33	39		
	Staurastrum	*tauphorum*	42	51	57	122		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Staurastrum	*tetracerum*	8	22	18	22		
	Staurastrum	*tetracerum* forma	16	37	37	47		
	Staurastrum	*tohopekalingense*	16	32	13	30		
	Staurastrum	*tohopekalingense* fa. *minus*	17	38	16	40		
	Staurastrum	*tohopekalingense* var. *trifurcatum*	40	77	31	80		
	Staurastrum	*wildemanii*		45	45	53		
	Staurastrum	*wildemanii* forma	70	133	73	152		
	Staurastrum	*zonatum* var. *ceylanicum*	25	35		35		
	Staurastrum	*zonatum* var. *majus*	28	44		59		
	Staurastrum	sp. 1	44	102	29	112		
	Staurastrum	*sp. 2*	61	63	48	53		
	Staurastrum	sp. 3		26	37	40		
	Staurastrum	sp. 4	19	28	18	40		
	Staurastrum	sp. 5		28		24		
	Staurastrum	sp. 5		28		24		
	Staurastrum	sp. 6		24.5		24		
	Staurastrum	sp. 7	19	23	27	29		
	Staurastrum	sp. 8		18		28		
	Staurodesmus	*arcuatus*	43	63	40	43		
	Staurodesmus	*arcuatus* var. *octospinatus*	44	59	41	65		
	Staurodesmus	*bulnheimii var. huitfeldtii*	20	38	20	50		
	Staurodesmus	*connatus*	27	60	30	58		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Staurodesmus	*connatus* forma	18	23	20	30		
	Staurodesmus	*curvatus* var. *borgei*		29	31	85		
	Staurodesmus	*curvatus* var. *latus*		46	45	93		
	Staurodesmus	*curvatus* var. *latus* forma		34	31	57		
	Staurodesmus	*cuspidatus*	34	78	33	97		
	Staurodesmus	*cuspidatus* var. *divergens*	27	50	23	43		
	Staurodesmus	*cuspidatus* var. *divergens* forma	16	25	15	21		
	Staurodesmus	*dickiei* forma		25	30	32		
	Staurodesmus	*dickiei* var. *maximus*		63		59		
	Staurodesmus	*dickiei* var. *maximus* fa. *Grande*	70	71	69	71		
	Staurodesmus	*Extensus*	20	21	20	58		
	Staurodesmus	*Furcatospermus*	14	15	12	44		
	Staurodesmus	*gibberulus*	31	33	30	44		
	Staurodesmus	*gibberulus* forma	31	33	28	40		
	Staurodesmus	*gibberulus* forma *mucronatus*		26	15	40		
	Staurodesmus	*glaber*	30	31	54			
	Staurodesmus	*glaber* var. *hirudinella*		18	23	37		
	Staurodesmus	*lunatus* forma		38		45		
	Staurodesmus	*megacanthus* forma	43	49	46	73		
	Staurodesmus	*megacanthus* var. *orientalis*	28	30	34	84		
	Staurodesmus	*mucronatus* var. *delicatulus* forma		38	40	56		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Staurodesmus	*psilosporus* forma	27	30	32	36		
	Staurodesmus	*spencerianus* var. *triangulatus*	21	25	22	29		
	Staurodesmus	*spencerianus* var. *triangulatus* forma		19		23		
	Staurodesmus	*unicornis* var. *gracilis*	22	25	23	47		
	Staurodesmus	*validus*	36	82	36	85		
	Staurodesmus	*validus* forma	25	49	29	43		
	Staurodesmus	sp. 1	110	117	120	170		
	Staurodesmus	sp. 2		60	60	75		
	Staurodesmus	sp. 3	22	32	34	39		
	Staurodesmus	sp. 4		13		18		
	Streptonema	*trilobatum*	27	29		50		
	Tetmemorus	*brebissonii*	152	184	26	27		
	Tetmemorus	*laevis*		113		26		
	Triplocerus	*gracile*		223		27		
	Triplocerus	*gracile* forma 1		241		33		
	Triplocerus	*gracile* forma 2		267		22		
	Triplocerus	*gracile* forma 3	395	428	61	64		
	Triplocerus	*gracile* var. *elegans*	250	470	71	95		
	Triplocerus	*splendens*						
	Triplocerus	*verticillatum* var. *superbum*	262	285		48		
	Xanthidium	*acanthophorum*	37	65	31	63		
	Xanthidium	*antilopaeum*	81	95	143	162		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Xanthidium	*apiculatum*	32	42	49	43		
	Xanthidium	*armatum* var. *anguliferum*	93	124	66	69		
	Xanthidium	*burkilii*	46	85	48	91		
	Xanthidium	*calcarato-aculeatum*	53	92	55	80		
	Xanthidium	*controversum*	27	67	24	68		
	Xanthidium	*hastiferum*	35	75	29	81		
	Xanthidium	*hastiferum* var. *javanicum*	40	77	36	80		
	Xanthidium	*multicorne*	62	113	44	103		
	Xanthidium	*sexmamillatum* var. *pulneyense*	52	107	44	113		
	Xanthidium	*subtrilobum*	45	66	42	68		
	Xanthidium	*subtrilobum* var. *inornatum*	42	60	40	57		
	Xanthidium	*superbum*	88	113	55	75		
	Xanthidium	sp. 2	50	75	42	72		
Gonatozygonaceae	*Gonatozygon*	*aculeatum*		186	12	14		
	Gonatozygon	*brebissonii*		124		5		
	Gonatozygon	*monotaenium* forma		180		6		
	Gonatozygon	*monotaenium* var. *gracile*		90		4		
Mesotaeniaceae	*Cylindrocystis*	*brebissonii* var. *minor*		35		14		
	Netrium	*digitus*	108	161	32	39		
	Netrium	*digitus* var. *lamellosum*		266		50		
	Netrium	sp.	530	516	56	61		
	Spirotaenium	*condensata*	97		11			

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
Zygnemataceae	*Mougeotia*	*acadiana*	265	305	23	30		
	Mougeotia	*poinciana*	170	200	15	17		
	Mougeotia/Debarya	sp. 1	247	270	45	58		
	Mougeotia/Debarya	sp. 2	40	70	2	4		
	Spirogyra	*ellipsospora*	180	305	110	120		
Chloromonadaceae	*Gonyostomum*	*latum*		35		10		
	Merotrichia	*bacillata*	40	50	25	188		
Euglenaceae	*Euglena*	*acus*		155		10		
	Euglena	*oxyuris*		395		52		
	Euglena	*sanguinea*	55	91	29	43		
	Euglena	*spirogyra*		110		22		
	Euglena	sp.	23	33	10	11		
	Lepocinclis	*ovata* var. *deflandriana*		31		14		
	Lepocinclis	*ovum*		34		26		
	Lepocinclis	*ovum* var. *australis*		24		20		
	Lepocinclis	*salina*	34	38	27	29		
	Phacus	*curvicauda*	35	44	29	31		
	Phacus	*curvicauda* forma	40	46	32	34		
	Phacus	*helikoides*		85		42		
	Phacus	*longicauda*		115		39		
	Phacus	*suecicas*		30		20		
	Phacus	sp. 1	132	136	52	56		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Phacus	sp. 2	102	122	36	39		
	Strombomonas	*fluviatilis* var. *rugosa*	75	91	30	32		
	Strombomonas	sp. 1	73	76	30	33		
	Strombomonas	sp. 2	37	53	22	27		
	Strombomonas	sp. 3	38	42	21	23		
	Strombomonas	sp. 4	50	58		25		
	Trachelomonas	*armata* var. *steinii*	45	56		35		
	Trachelomonas	*clavata* var. *subarmata*		57		23		
	Trachelomonas	*granulosa*		24		21		
	Trachelomonas	*hispida*		37		24		
	Trachelomonas	*oblonga* var. *australica*	16	27	15	27		
	Trachelomonas	*playfairii*		31		20		
	Trachelomonas	*splendida* forma		48		17		
	Trachelomonas	*superba*	42	48	32	39		
	Trachelomonas	sp. 1	45	71	31	65		
	Trachelomonas	sp. 2	64	65	16	17		
Chrysococcaceae	*Chrysococcus*	*radians*	6	7	2	6		
Dinobryaceae	*Dinobryon*	*bavaricum*	33	37	8	9		
	Dinobryon	*divergens* var. *schauinslandii*	46	49	8	10		
	Dinobryon	*sertularia*	30	36	8	9		
Synuraceae	*Mallomonas*	*splendens*		48		13		
Sciadaceae	*Centritractus*	*belanophorus*	30	65	6.5	9		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Ophiocytium	*capitatum*	5	7	7	21		
Glenodiniaceae	*Sphaerodinium*	*cinctum* var. *limneticum*						41
Peridiniaceae	*Peridinium*	*gatunense*	63	68	70	78		
	Peridinium	*gutwinskii*	60	65	54	61		
	Peridinium	*inconspicuum*		30		30		
	Peridinium	*intermedium* var. *conicum*		30		30		
	Peridinium	*palustre* var. *raciborskii*	80	91	77	85		
	Peridinium	*umbonatum* var. *inaequale*		24		21		
	Peridinium	sp. 1	116	118	96	99		
Chroococcaceae	*Aphanocapsa*	*koordersi*					2	3
	Coelosphaerium	*pallidum*	2	4	1.5	3		
	Merismopedia	*glauca*		4		3		
	Merismopedia	sp. 1					1.5	3
	Microcystis	*aeruginosa*					4	5
	cf. Aphanothece	sp						
	Synechococcus	sp						
Nostocaceae	*Anabaena*	*catenula*	6	8	7	10		
	Anabaena	*flos-aquae*					4	6
	Nostoc	sp						
Oscillatoriaceae	*Oscillatoria*	*lemmermannii*	7	12		2		
	Oscillatoria	*princeps*		30	3	4		
	Oscillatoria	*subbrevis* fa. *major*	1	3	10	11		

Family	Genus	Species	Cell length min. µm	Cell length max. µm	Cell width min. µm	Cell width max. µm	Cell diameter min. µm	Cell diameter max. µm
	Oscillatoria	sp. 1	2	4	6	7		
	Oscillatoria	sp. 2	2	4	5	6		
	Oscillatoria	sp. 3	3	4		10		
	Spirulina	*princeps*		3		8		
	Lyngbya	sp						
	Microcoleus	sp						
	Porphyrosiphon	sp						
	cf. Pseudanabaena	sp						
	Scizothrix	sp						
Stigonemataceae	*Hapalosiphon*	sp.					4	7
	Stigonema	sp						
Batrachospermaceae	*Batrachospermum*	*moniliforme*	no size given					
Hyellaceae	*Pleurocapsa*	sp						
Clastidiaceae	*cf. Chroococcidiopsis*	sp						
Scytonemataceae	*Scytonema*	sp						
	Tolypothrix	sp						
Microchaetaceae	*Microchaete*	sp						
Rivulariaceae	*Calothrix*	sp						

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Appendix 2 Magela Creek diatoms

Genus	Species	length min. µm	length max. µm	width min. µm	width max. µm	Length (mm)	Scale µ	width (mm)	Scale µ
Achanthes	*affinis*		17		5	24	10	7	10
Achanthes	*linearis*		22		4.29	31	10	6	10
Achanthes	*minutissima*		17		3.57	24	10	5	10
Achanthes	sp. 1		31		11.43	44	10	16	10
Amphora	*argus*		29		7.14	41	10	10	10
Anomoeoneis	*exilis* var. *gomphonemacea*		41		9.29	58	10	13	10
Anomoeoneis	*exilis* var. *lanceolata*		27		6.43	38	10	9	10
Anomoeoneis	*serians* var. *acuta*		24		5.71	33	10	8	10
Anomoeoneis	*serians* var. *brachysira*		35		10.71	49	10	15	10
Asterionella	*zasuminensis*		31		5	43	10	7	10
Campylodiscus	*pervulsus*		104		103.57	58	50	58	50
Cocconeis	*placentula*		29		14.29	40	10	20	10
Cocconeis	*scutellum*		14		7.14	19	10	10	10
Coscinodiscus	*asteromphalus*		70		70.71	98	10	99	10
Coscinodiscus	*lineatus*		50		31.43	70	10	44	10
Cyclotella	*meneghiniana*		14		5.71	20	10	8	10
Cyclotella	*stylorum*		54		52.86	75	10	74	10
Cymbella	*cymbiformis*		0		0				
Cymbella	*claasseniae*		36		6.43	51	10	9	10
Cymbella	*hustedtii*		25		8.57	35	10	12	10
Cymbella	*minuta*		43		11.43	60	10	16	10
Cymbella	*spicula*		59		7.14	83	10	10	10

Genus	Species	length min. µm	length max. µm	width min. µm	width max. µm	Length (mm)	Scale µ	width (mm)	Scale µ
Cymbella	*subturgida*		80		17.14	112	10	24	10
Diploneis	*subadvena*		21		8.57	29	10	12	10
Epithemia	*cistula*		56		12.14	78	10	17	10
Eunotia	*aequalis*		46		5	65	10	7	10
Eunotia	*ambigua*		26		3.57	36	10	5	10
Eunotia	*astriclevae*		59		6.43	83	10	9	10
Eunotia	*bicapitata*		190		5.71	133	20	4	20
Eunotia	*camelus*		32		6.43	45	10	9	10
Eunotia	*camelus* var. *denticulata*		99		10	69	20	7	20
Eunotia	*camelus* var. *ventricosa*		43		7.14	60	10	10	10
Eunotia	*didyma* var. *media*		116		14.29	81	20	10	20
Eunotia	*flexuosa*		213		2.86	149	20	4	10
Eunotia	*herbridica* var. *bergii*		60		11.43	42	20	8	20
Eunotia	*lunaris*		66		2.86	93	10	4	10
Eunotia	*monodon*		45		7.86	63	10	11	10
Eunotia	*monodon* var. *tropica*		97		10	68	20	7	20
Eunotia	*parallela*		107		10	75	20	7	20
Eunotia	*pectinalis*		32		5.71	45	10	8	10
Eunotia	*pectinalis* var. *undulata*		64		11.43	45	20	8	20
Eunotia	*pectinalis* var. *undulata* f. *fosslis*		48		7.14	67	10	10	10
Eunotia	*pseudoindica* var. *gracilis*		0		0				
Eunotia	*pseudopectinalis*		91		7.14	128	10	5	20

Genus	Species	length min. µm	length max. µm	width min. µm	width max. µm	Length (mm)	Scale µ	width (mm)	Scale µ
Eunotia	*rabenhorstiana* var. *elongatum*		119		8.57	83	20	6	20
Eunotia	*rabenhorstii* var. *africana* f. *triodon*		23		2.14	32	10	3	10
Eunotia	*sudetica* var. *australis*		26		3.57	37	10	5	10
Eunotia	*triconfusa*		29		3.57	40	10	5	10
Eunotia	*trigibba*		36		7.14	50	10	10	10
Eunotia	*trinacria* var. *undulata*		34		2.14	47	10	3	10
Eunotia	*zygodon*		77		20	54	20	14	20
Eunotia	*zygodon* var. *depressa*		107		14.29	75	20	10	20
Eunotia	*zygodon* var. *emarginata*		111		11.43	78	20	8	20
Fragilaria	*strangulata*		61		5.71	86	10	8	10
Frustulia	*entrancensis*		73		14.29	102	10	20	10
Frustulia	*rhomboides*		65		14.29	91	10	20	10
Gomphonema	*gracile*		61		9.29	86	10	13	10
Gomphonema	*intricatum* var. *vibrio*		109		15.71	153	10	22	10
Gomphonema	*parvulum*		24		5.71	34	10	8	10
Gomphonema	*subtile*		33		6.43	46	10	9	10
Hantzschia	*amphioxys*		35		6.43	49	10	9	10
Hantzschia	*amphioxys* var. *gracilis*		205		10.67	154	20	8	20
Mastogloia	*ellipta* var. *dansei*		46		15	65	10	21	10
Melosira	*distans*		10		3.57	14	10	5	10
Melosira	*granulata*		21		11.43	30	10	16	10
Melosira	*granulata* var. *angustissima*		21		5	30	10	7	10

Genus	Species	length min. µm	length max. µm	width min. µm	width max. µm	Length (mm)	Scale µ	width (mm)	Scale µ
Melosira	*granulata* var. *muzzanensis*		21		9.29	30	10	13	10
Navicula	*acceptata*		0		0				
Navicula	*americana*		54		14.29	75	10	20	10
Navicula	*anglica* var. *subsala*		26		9.29	36	10	13	10
Navicula	*arvensis*		13		5	18	10	7	10
Navicula	*bremensis*		14		2.86	19	10	4	10
Navicula	*diserta*		22		6.43	31	10	9	10
Navicula	*disparata*		15		6.43	21	10	9	10
Navicula	*dutoitana*		24		3.57	33	10	5	10
Navicula	*geinitzi*		14		5.71	20	10	8	10
Navicula	*gysingensis*		5		2.86	7	10	4	10
Navicula	*halophilioides*		32		7.14	45	10	10	10
Navicula	*jungii*		29		5.71	40	10	8	10
Navicula	*mutica*		21		6.43	29	10	9	10
Navicula	*nuda*		43		8.57	60	10	12	10
Navicula	*perrotettii*		110		18.57	77	20	13	20
Navicula	*pseudislandica*		12		5	17	10	7	10
Navicula	*pseudosubtilissima*		19		4.29	26	10	6	10
Navicula	*pupula*		33		7.14	46	10	10	10
Navicula	*pupula* var. *rectangularis*		46		8.57	65	10	12	10
Navicula	*radiosa*		51		6.43	72	10	9	10
Navicula	*rhynchocephala*		26		6.43	37	10	9	10
Navicula	*schwabei*		124		18.57	87	20	13	20

Genus	Species	length min. µm	length max. µm	width min. µm	width max. µm	Length (mm)	Scale µ	width (mm)	Scale µ
Navicula	*viridula*		25		6.43	35	10	9	10
Neidium	*bisulcatum*		60		12.14	84	10	17	10
Neidium	*dilatatum*		84		34.29	59	20	24	20
Neidium	*iridis* var. *amphigomphus*		49		12.86	69	10	18	10
Nitzschia	*congolensis*		57		2.86	80	10	4	10
Nitzschia	*cursoria*		56		5	78	10	7	10
Nitzschia	*habirshawii*		430		23.33	129	50	7	50
Nitzschia	*lanceolata*		31		5	44	10	7	10
Nitzschia	*longissima*		69		4.29	97	10	6	10
Nitzschia	*obtusa* var. *nana*		31		4.29	43	10	6	10
Nitzschia	*obtus* var. *scalpelliformis*		86		7.14	120	10	10	10
Nitzschia	*palea*		32		5	45	10	7	10
Nitzschia	*rostellata*		60		3.57	84	10	5	10
Nitzschia	*subcapitellata*		43		4.29	60	10	6	10
Nitzschia	*tryblionella* var. *maxima*		35		12.86	49	10	18	10
Pinnularia	*acrosphaeria* var. *turgidula*		129		18.57	90	20	13	20
Pinnularia	*biceps*		47		7.14	66	10	10	10
Pinnularia	*bogotensis*		131		17.14	183	10	24	10
Pinnularia	*braunii* var. *amphicephala*		30		5.71	42	10	8	10
Pinnularia	*brevicostata* f. *ventricosa*		79		11.43	110	10	16	10
Pinnularia	*brevicostata* var. *sumatrana*		100		18.57	70	20	13	20
Pinnularia	*gibba*		55		11.43	77	10	16	10
Pinnularia	*gibba* var. *linearis*		64		10.71	89	10	15	10

Genus	Species	length min. µm	length max. µm	width min. µm	width max. µm	Length (mm)	Scale µ	width (mm)	Scale µ
Pinnularia	*intermedia*		43		7.14	60	10	10	10
Pinnularia	*legumen*		87		10	122	10	14	10
Pinnularia	*luculenta*		98		11.43	137	10	16	10
Pinnularia	*major*		166		21.43	116	20	15	20
Pinnularia	*microstauron*		36		5	50	10	7	10
Pinnularia	*rangoonensis*		67		10.71	94	10	15	10
Pinnularia	*stauroptera*		71		10.71	100	10	15	10
Rhizosolenia	*eriensis*		16		15	23	10	21	10
Rhopalodia	*gibba* var. *ventricosa*		44		20.71	61	10	29	10
Stauroneis	*anceps*		91		14.29	128	10	20	10
Stauroneis	*anceps* var. *birostris*		81		12.14	113	10	17	10
Stauroneis	*phoenicenteron*		102		20	143	10	28	10
Stauroneis	*phoenicenteron* var. *hattorii*		71		12.86	99	10	18	10
Stauroneis	*phoenicenteron* var. *nobilis*		71		14.29	100	10	20	10
Stenopterobia	*intermedia*		159		5.33	119	20	4	20
Stenopterobia	*intermedia* var. *capitata*		231		5.33	173	20	4	20
Surirella	*arachnoidea*		29		20	40	10	28	10
Surirella	*biseriata*		189		46.67	142	20	35	20
Surirella	*biseriata* var. *constricta*		72		17.86	101	10	25	10
Surirella	*biseriata* var. *subparallela*		112		21.43	157	10	30	10
Surirella	*delicatissima*		66		7.14	93	10	10	10
Surirella	*gemma*		66		27.14	92	10	38	10
Surirella	*linearis* var. *constricta*		91		17.86	127	10	25	10

Genus	Species	length min. µm	length max. µm	width min. µm	width max. µm	Length (mm)	Scale µ	width (mm)	Scale µ
Surirella	*robusta*		83		22.14	116	10	31	10
Surirella	*spiralis*		117		65.22	54	50	30	50
Surirella	*thienemanni*		81		18.67	61	20	14	20
Synedra	*ulna*		196		7.14	137	20	5	20
a form of unknown affinity			0		0				
Eunotia	*serra* var. *diadema*		0		0				
Navicula	*lyra*		0		0				
Rhyzosolenia	*loniseta*		0		0				
Synedra	*rumpens*		0		0				
Synedra	*tabulata*		0		0				
Tabellaria	*flocculosa*		0		0				

Appendix 3 Magela Creek vegetation

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form		
Annuals								
	Aeschynomene	*americana**	A		F	Ase	RR5 Finlayson, Bailey & Cowie 1989	
	Aeschynomene	*aspera**	A		PF	Ase		
	Aeschynomene	*indica*	A		PF	Ase		
	Alysicarpus	*muelleri*		T	F	Th	Growth form key	Habitat key
	Alysicarpus	*vaginalis*		T	PF	Th	A = aquatic	B = billabong
	Aneilema	*siliculosum*		T	F	Th	T = terrestrial	P = seasonally inundated plain
	Bacopa	*floribunda*		T	PF	Th	s = shrub	F = fringe zone
	Basilicum	*polystachyon*		T	F	Th	c = sedge	S = permanent swamp
	Blumea	*integrifolia*		T	F	Th	g = grass	
	Blumea	*tenella*		T	F	Th	v = vine	
	Blyxa	*aubertii var. indeterminate*	A		P	Ahs	h = herb	
	Blyxa	*octandra*	A		BP	Ahs	t = tree	
	Boerhavia	*coccinea*		T	F	Th	p = palm	
	Boerhavia	*australiana*		T	F	Th	e = emergent	
	Spermacoce	*breviflora*		T	F	Th	f = floating-leaved	
	Brachiaria	*holosericea subsp. Indeterminate*		T	F	Tg	s = submerged rooted	
	Brachiaria	*pubigera*		T	F	Tg	b = free-floating	
	Caldesia	*oligococca*	A		BP	Ahf	d = free-floating submerged	
	Goodenia	*pilosa*		T	F	Th	* = alien species	
	Cardiospermum	*halicacabum var. halicacabum*		T	F	Th		
	Cartonema	*spicatum*		T	F	Th		

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form	
	Cassia	*occidentalis*		T	F	Ts	
	Centipeda	*minima subsp. Indeterminate*		T	PF	Th	
	Centrolepis	*exserta*		T	F	Tc	
	Ceratophyllum	*demersum*	A		BPS	Ahs	
	Ceratopteris	*thalictroides*	A		BPFS	Ahs	Vegetation taxonomy checked against Kym Brennan's
	Cleome	*tetranda var. indeterminate*		T	F	Th	
	Cleome	*viscosa*		T	F	Th	Plantbuster access database 15/08/03 by C Camilleri
	Coldenia	*procumbens*		T	PF	Th	
	Commelina	*ensifolia*		T	F	Th	
	Commelina	*agrostophylla*		T	F	Th	
	Corchorus	*aestuans**		T	F	Ts	
	Crotalaria	*medicaginea*		T	F	Ts	
	Cyanotis	*axillaris*		T	P	Th	
	Cynodon	*dactylon**		T	F	Tg	
	Cyperus	*aquatilus*		T	P	Tc	
	Cyperus	*breviculmis*		T	P	Tc	
	Cyperus	*castaneus*		T	F	Tc	
	Cyperus	*compressus*		T	F	Tc	
	Cyperus	*cuspidatus*		T	F	Tc	
	Cyperus	*digitatus*		T	P	Tc	
	Cyperus	*iria*		T	F	Tc	
	Cyperus	*polystachyos*		T	F	Tc	
	Dentella	*dioeca*		T	F	Th	

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form
	Dentella	*repens*		T	F	Th
	Desmodium	*filiforme*		T	PF	Th
	Desmodium	*flagellare*		T	PF	Th
	Digitaria	*bicornis**		T	F	Tg
	Alyxias	*stellata*	A		P	Ahe/s
	Ebermaiera	*glauca*		T	F	Th
	Echinochloa	*colona**		T	F	Tg
	Echinochloa	*elliptica*		T	P	Tg
	Eclipta	*prostrata*		T	PF	Th
	Ectrosia	*leporina var. indeterminate*		T	F	Tg
	Ectrosia	*shultzii var. indeterminate*		T	F	Tg
	Eleocharis	*caespitosissima*	A		BP	Ace
	Epaltes	*sp.*		T	F	Th
	Eragrostis	*tenellula*		T	F	Tg
	Eriocaulon	*setaceum*	A		PF	Ahs
	Eriocaulon	*spectabile*		T	F	Th
	Eulalia	*annua*		T	F	Tg
	Euphorbia	*hirta**		T	F	Th
	Euphorbia	*vachelli*		T	PF	Th
	Fimbristylis	*aestivalis*		T	P	Tc
	Fimbristylis	*clavata*		T	F	Tc
	Fimbristylis	*littoralis var. littoralis*		T	F	Tc
	Fimbristylis	*pauciflora*		T	F	Tc

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form
	Fimbristylis	*punctata*		T	F	Tc
	Fimbristylis	*simplex*		T	PF	Tc
	Fuirena	*ciliaris*		T	PF	Tc
	Glinus	*lotoides*		T	P	Th
	Glinus	*oppositifolius*		T	PF	Th
	Oldenlandia	*mitrasacmoides* subsp. *indeterminate*		T	F	Th
	Heliotropium	*crispatum*		T	P	Th
	Heliotropium	*indicum**		T	PF	Th
	Hibiscus	*sabdariffa**		T	F	Ts
	Hydrocotyle	*grammatocarpa*		T	P	Th
	Hygrochloa	*aquatica*	A		P	Agf
	Hygrophila	*salicifolia*		T	F	Th
	Hyptis	*suaveolens**		T	F	Ts
	Ipomoea	*aquatica*	A		BP	Ave
	Ipomoea	*coptica*		T	P	Tv
	Isoetes	*coromandelina* subsp. *macrotuberculata*	A		P	Ahs
	Limnophila	*australis*	A		BP	Ahe
	Limnophila	*chinensis*		T	F	Th
	Limnophila	*fragrans*		T	F	Th
	Limnophila	*gratioloides*	A		BP	Ahe
	Lindernia	*mitrasacmoides*		T	F	Th
	Lindernia	*plantaginea*		T	F	Th
	Lipocarpha	*microcephala*		T	F	Tc

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form
	Ludwigia	*hyssopifolia*		T	F	Th
	Ludwigia	*octovalis* subsp. indeterminate		T	P	Th
	Ludwigia	*perennis*		T	PF	Th
	Maidenia	*rubra*	A		BP	Ahs
	Malachra	*fasciata* var. *lineariloba**	A		F	Ase
	Marsilea	*crenata*	A		B	Ahf
	Marsilea	*drummondii*	A		B	Ahf
	Marsilea	*mutica*	A		BP	Ahf
	Melochia	*corchorifolia*		T	F	Th
	Microcarpaea	*minima*		T	F	Th
	Mimulus	*debilis*		T	F	Th
	Mimulus	*uvedaliae* var. indeterminate		T	F	Th
	Mitrasacme	*exserta*		T	F	Th
	Monochoria	*cyanea*	A		PF	Ahb/e
	Monochoria	*vaginalis*	A		P	Ahb/e
	Myriophyllum	*dioccum*	A		BP	Ahe
	Najas	*tenuifolia*	A		BPS	Ahs
	Nelsonia	*campestris*		T	F	Th
	Nymphoides	*hydrocharoides*	A		P	Ahf
	Nymphoides	*minima*	A		P	Ahf
	Nymphoides	*parviflora*	A		P	Ahf
	Nymphoides	*spongiosa*	A		BP	Ahf
	Oryza	*meridionalis*	A		P	Age

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form
	Panicum	*mindanaense*		T	F	Tg
	Phyla	*nodiflora* var. nodiflora		T	PF	Th
	Phyllanthus	*minutiflorus*		T	F	Th
	Physalis	*minima**		T	F	Th
	Portulaca	*bicolor* var. *indeterminate*		T	F	Th
	Portulaca	*filifolia*		T	F	Th
	Rhynchospora	*longisetis*		T	F	Tc
	Rotala	*occultiflora*	A	T	F	A/Th
	Sacciolepis	*indica*		T	F	Tg
	Sacciolepis	*myosuroides*		T	F	Tg
	Schizachyrium	*fragile*		T	F	Tg
	Scoparia	*dulcis*		T	F	Th
	Sesbania	*cannabina* var. *cannabina*	A		PF	Ase
	Sesbania	*sesban*	A		F	Ase
	Setaria	*apiculata*		T	F	Tg
	Sporobolus	*australasicus*		T	F	Tg
	Stylidium	*floodii*		T	F	Th
	Stylidium	*rotundifolium*		T	F	Th
	Trianthema	*portulacastrum*		T	F	Th
	Triglochin	*dubium*	A		P	Ahf/s
	Utricularia	*aurea*	A		BP	Ahd
	Utricularia	*exoleta*	A		BP	Ahd
	Utricularia	*muelleri*	A		BP	Ahd

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form
	Vallisneria	*gigantea*	A		BP	Ahs
	Cyanthillium	*cinereum*		T	F	Th
	Whiteochloa	*capillipes*		T	F	Tg
Perennials						
	Acacia	*holosericea*		T	F	Ts
	Alstonia	*actinophylla*		T	F	Tt
	Alternanthera	*micrantha*		T	PF	Th
	Alternanthera	*nodiflora*		T	P	Th
	Aniseia	*martinicensis*	A		F	Av
	Azolla	*pinnata*	A		PBF	Ahb
	Barringtonia	*acutangula* subsp. *Acutangula*	A	T	BPF	A/Tt
	Canarium	*australianum*		T	F	Tt
	Cayratia	*trifolia*		T	F	Tv
	Cynodon	*radiatus**		T	F	Tg
	Cyperus	*haspan* subsp. *Indeterminate*		T	F	Tc
	Cyperus	*javanicus* subsp. *Armstrongii*		T	F	Tc
	Cyperus	*platystylis*	A		BPS	Ace
	Eriachne	*obtusa*		T	F	Tg
	Eriachne	*shultziana*		T	F	Tg
	Eriachne	*triseta*		T	F	Tg
	Eucalyptus	*alba* var. *australasica*		T	F	Tt
	Eucalyptus	*papuana*		T	F	Tt
	Corymbia	*polycarpa*		T	F	Tt

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form
	Corymbia	*setosa* subsp. *Indeterminate*		T	F	Tt
	Ficus	*scobina*		T	F	Tt
	Fimbristylis	*denudata*	A		PF	Ace
	Flagellaria	*indica*		T	F	Tv
	Gymnanthera	*oblonga*		T	F	Tv
	Hydrilla	*verticillata*	A		P	Ahe
	Hymenachne	*acutigluma*	A		BPS	Age
	Actinoscirpus	*grossa*	A		BS	Ace
	Leersia	*hexandra*	A		BS	Age/b
	Lemna	*aequinoctialis*	A		BPS	Ahb
	Lemna	*tenera*	A		BPS	Ahb
	Lepironia	*articulata*	A		B	Ace
	Livistona	*benthamii*	A	T	PFS	A/Tp
	Lophostemon	*lactifluus*		T	F	Tt
	Ludwigia	*adscendens*	A		BP	Ahe/b
	Melaleuca	*argentea*	A	T	P	A/Tt
	Melaleuca	*cajaputi* subsp. *Indeterminate*	A	T	BPF	A/Tt
	Melaleuca	*leucadendra*	A	T	BPF	A/Tt
	Asteromyrtus	*symphyocarpa*	A	T	F	A/Tt
	Melaleuca	*viridiflora*	A	T	PF	A/Tt
	Merremia	*gemella* var. *splendens*	A		PF	Av
	Mimosa	*pigra**	A		PF	Ase
	Murdannia	*graminea*		T	F	Th

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form
	Nelumbo	*nucifera*	A		BPS	Ahe
	Nymphoides	*indica*	A		BP	Ahf
	Pandanus	*aquaticus*	A		BP	At
	Pandanus	*spiralis*		T	F	Tt
	Panicum	*paludosum*	A		BP	Age
	Paspalum	*scrobiculatum*	A	T	F	A/Tge
	Passiflora	*foetida**		T	F	Tv
	Philydrum	*lanuginosum*	A		F	Ahe
	Phragmites	*vallatoria*	A		P	Age
	Phyllanthus	*reticulatus*	A		F	Ase
	Phyllanthus	*virgatus*		T	F	Th
	Platyzoma	*microphyllum*		T	F	Th
	Polygonum	*attenuata* subsp. *Attenuata*	A		BPFS	Ahe
	Pseudoraphis	*spinescens*	A		BPFS	Age
	Salvinia	*molesta**	A		BPF	Ahb
	Schoenoplectus	*articulatus*	A		P	Ace
	Sida	*acuta**		T	F	Ts
	Sida	*cordifolia**		T	F	Ts
	Spirodela	*polyrhiza*	A		BPS	Ahb
	Stemodia	*viscosa*		T	F	Th
	Stylosanthes	*hamata**		T	F	Th
	Syzygium	*suborbiculare*		T	F	Tt
	Triumfetta	*rhomboidea*		T	F	Ts

Family	Genus	Species	Aquatic	Terrestrial	Habitat	Growth form	
	Urochloa	*mutica**	A		BP	Age/b	
	Chrysopogon	*oliganthus*		T	F	Tg	
	Vitex	*glabrata*		T	F	Tt	
	Xanthostemon	*eucalyptoides*		T	F	Tt	
Geophytic perennial							
	Aponogeton	*euryspermus/vanbruggerii*	A		F	Ahs	
	Crinum	*asiaticum*	A	T	F	A/Th	
	Crinum	*uniflorum*	A	T	F	A/Th	
	Drosera	*burmanni*		T	F	Th	
	Drosera	*indica*		T	F	Th	
	Eleocharis	*brassii*	A		BP	Ace	
	Eleocharis	*dulcis*	A		BPS	Ace	
	Eleocharis	*sphacelata*	A		BP	Ace	
	Nymphaea	*hastifolia*	A		PFS	Ahf	
	Nymphaea	*macrosperma*	A		BPS	Ahf	
	Nymphaea	*nouchali*	A		FS	Ahf	
	Nymphaea	*pubescens*	A		BP	Ahf	Total = 219 species
	Nymphaea	*violacea*	A		BPFS	Ahf	
	Sowerbaea	*alliacea*		T	F	Th	

Appendix 4 Magela Creek microinvertebrate fauna

Family	Genus	Species	body length (mm)	body width (mm)
CLADOCERA				
Sididae	*Diaphanosoma*	*excisum*	0.923	0.415
	Diaphanosoma	*sarsi*		
	Pseudosida	*bidentata*	1.323	0.662
	Sarsilatona	*papuana*	1.492	0.769
	Latonopsis	*australis*	1.000	0.462
	Latonopsis	*brehmi*		
Bosminidae	*Bosminopsis*	*deitersi*	0.420	0.279
	Bosmina	*meridionalis*		
Chydoridae	*Alonella*	*clathratula*	0.240	0.17
	Chydorus	*eurynotus*	0.333	0.261
	Chydorus	*cf. opacus*	0.351	0.327
	Ephemeroporus	*barroisi*	0.273	0.212
	Dunhevedia	*crassa*	0.480	0.34
	Australochydorus	*aporus*	0.491	0.364
	Dadaya	*macrops*	0.340	0.26
	Leydigia	*acanthocercoides*	0.552	0.37
	Graptoleberis	*testudinaria*	0.485	0.248
	Alona	*sp.* near *costata*	0.479	0.25
	Alona	*sp.* near *cambouei*	0.117	0.07
	Alona	*monacantha*	0.364	0.23
	Alona	*davidi*	0.406	0.327

Family	Genus	Species	body length (mm)	body width (mm)
	Kurzia	*longirostris*	0.564	0.391
	Camtpocercus	*australis*	0.783	0.461
	Euryalona	*orientalis*		
	Notoalana	*globulosa australiensis*	0.406	0.333
	Alona	*macrocopa*	0.388	0.236
	Karualona	*karua*	0.388	0.242
	Alona	*rigidicaudis*	0.323	0.219
	Alona	*verrucosa*	0.394	0.239
	Alona	*kendallensis*	0.826	0.461
	Oxyurella	*singalensis*	0.435	0.253
Moinidae	*Moina*	*micrura*	0.969	0.538
	Moina	*australiensis*		
	Moinodaphnia	*macleayi*	1.000	0.646
Macrothricidae	*Ilyocryptus*	*smirnovi*		
	Ilyocryptus	*brevidentatis*		
	Ilyocryptus	*timmsi*	1.385	1.077
	Streblocerus	*serricaudatus*	0.339	242
	Macrothrix	*spinosa*	0.350	0.244
	Macrothrix	*hystrix*		
	Macrothrix	*breviseta*		
	Macothrix	*capensis*		
	Macothrix	*triserialis*	0.636	0.412
	Macothrix	*williamsi*		

Family	Genus	Species	body length (mm)	body width (mm)
Daphniidae	*Scapholeberis*	*kingi*	0.520	0.32
	Ceriodaphnia	*cornuta*	0.450	0.3
	Ceriodaphnia	*laticaudata*		
	Ceriodaphnia	*dubia*		
	Simocephalus	*heilongjiangensis*	1.508	1
	Simocephalus	*vetulus*		
	Simocephalus	*serrulatus*		
	Simocephalus	*acutirostratus*		
COPEPODA				
Calanoida	*Eodiaptomus*	*lumholtzi*	1.308	0.385
	Tropodiaptomus	*australis*		
	Calamoecia	*ultima*	1.000	0.185
Cyclopoida	*Mesocyclops*	sp. Nov		
	Thermocyclops	*decipiens*	0.831	0.277
	Thermocyclops	*hyalinus*		
	Mesocyclops	*aspericornis*		
	Mesocyclops	*kieferi ?? Needs taxonomic verification using a specimen*	0.862	0.323
	Apocyclops	*dengizicus*		
	Microcyclops	*varicans*	0.692	0.246
	Chlorohydra	*viridissima*		

gaps in data where no diagram available for measurement

Family	Genus	Species	body length (mm)	body width (mm)
TM 18 Julli 1986				
taxonomy checked by R Shiel Adelaide University				
			body length (min) up to µm	body length (max) um
ROTIFERS				
Superorder Bdelloida				
	Dissotrocha	*aculeata*		
	Dissotrocha	*macrostyla*		
	Bdelloida	indet		
Superorder Monogononta				
Order Ploimidae				
Family Epiphanidae				
	Epiphanes	*clavulata*	520.000	520
Family Brachionidae				
	Platyias	*quadricornis*	576.000	576
	Brachionus	*angularis*		
	Brachionus	*testudinarius*		
	Brachionus	*budapestinensis*	115.000	200
	Brachionus	*dichotomus dichotomus*		

Family	Genus	Species	body length (mm)	body width (mm)
	Brachionus	*dichotomus reductus*		
	Brachionus	*falcatus falcatus*	195.000	430
	Brachionus	*falcatus* Zach. F. *reductus*		
	Brachionus	*lyratus*		
	Brachionus	*quadridentatus melheni*	424.000	424
	Brachionus	*urceolaris sericus*	120.000	120
	Beauchampiella	*eudactylota*	420.000	760
	Anuraeopsis	*coelata coelata*	80.000	118
	Anuraeopsis	*navicula*	70.000	110
	Keratella	*tropica tropica*		
Family Collurellidae				
	Collurella	*obtusa*	60.000	60
	Lepadella	*latusinus latusinus*	80.000	92
	Lepadella	*patella patella*	120.000	145
	Lepadella	*patella* n.f.		
	Lepadella	*rhomboides*	110.000	120
Family Lecanidae				
	Lecane	*bulla bulla*	100.000	133
	Lecane	*closterocerca closterocerca*	54.000	85
	Lecane	*curvicornis curvicornis*	110.000	120
	Lecane	*hamata hamata*	61.000	88
	Lecane	*doryssa*	58.000	58
	Lecane	*ludwigi*	104.000	121

Family	Genus	Species	body length (mm)	body width (mm)
	Lecane	*papuana*	92.000	120
	Lecane	*pyriformis*	51.000	67
	Lecane	*quadridentata*	105.000	160
	Lecane	*scutata*	62.000	78
	Lecane	*signifera signifera*	124.000	135
	Lecane	*signifera ploenensis*	80.000	185
	Lecane	*tenuiseta*	70.000	70
	Lecane	*inopinata*		
Family Euchlanidae				
	Dipleuchlanis	*propatula macrodactyla*	128.000	244
Family Trichotridae				
	Macrochaetus	*collinsi*	196.000	250
	Macrochaetus	*danneeli*		
Family Notommatidae				
	Scaridium	*longicaudum*	360.000	450
	Monommata	*grandis*	350.000	680
	Monommata	*indet.*		
	Taphrocampa	*selenura*	220.000	290
	Notommata	*copeus*	500.000	1100
	Notommata	*indet.*		
	Resticula	*melandocus*	210.000	320
	Eosphora	*cf. thoides*	460.000	510
	Cephalodella	*gibba gibba*	250.000	450

Family	Genus	Species	body length (mm)	body width (mm)
	Cephalodella	*tinca*	260.000	280
	Cephalodella	*indet.*		
Family Trichoceridae				
	Trichocerca	*chattoni*	490.000	796
	Trichocerca	*longiseta*	300.000	575
	Trichocerca	*pusilla*	110.000	175
	Trichocerca	*similis similis*		
	Trichocerca	*stylata*	180.000	230
Family Gastropodidae				
	Ascomorpha	*saltans saltans*	100.000	165
Family Synchaetidae				
	Synchaeta	cf. *longipes*	164.000	204
	Polyarthra	cf. *vulgaris*	160.000	220
Family Asplanchnidae				
	Asplanchna	*sieboldi*	500.000	2500
Family Dicranophoridae				
	Dicranophorus	*claviger australiensis*	274.000	274
	Dicranophorus	*grandis*	200.000	450
Order Gnesiotrocha				
Family Testudinellidae				
	Testudinella	*patina patina*	120.000	350
	Testudinella	*tridentata tridentata*	120.000	133
	Lacinularia	*flosculosa*	2000.000	2000

Family	Genus	Species	body length (mm)	body width (mm)
	Octotrocha	*speciosa*	2000.000	2000
Family Conochilidae				
	Conochilus	*dossuarius*	200.000	250
	Conochilus	*unicornis*	250.000	1300
Family Hexarthridae				
	Hexarthra	*intermedia*	90.000	245
	Hexarthra	*mira*	160.000	400
Family Filiniidae				
	Filina	*australiensis*		
	Filina	*longiseta limnetica*	150.000	200
	Filina	*opoliensis*	150.000	204
	Filina	*passa*	180.000	224
	Filina	*pejleri*	140.000	200

Appendix 5 Magela Creek macroinvertebrate fauna

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
COLEOPTERA								
	Dytiscidae	*Antiporus* OSS4L				size range for adults of family Dytiscidae <6 to >25 mm (Williams 1995)		
	Dytiscidae	*Batractomatus wingi* (A)						
	Dytiscidae	*Cybister* OSS1L						
	Dytiscidae	OSS6L						
	Dytiscidae	*Tiporus* nr josephini (A)						
	Dytiscidae	indet. (L)						
	Dytiscidae L							
	Dytiscidae A							
	Dytiscidae							
	Elmidae	*Austrolimnius* sp2A (L)*						
	Elmidae	*Austrolimnius* sp2B (L)*						
	Elmidae	*Austrolimnius* sp4 (L)*				size range for adults of family Elmidae up to 5 mm (Williams 1995)		
	Elmidae	*Austrolimnius* sp9 (L)*				size range for larvae of genus Austrolimnius = up to 8 mm (CSIRO 1991)		
	Elmidae	*Austrolimnius* indet. (A)						
	Elmidae	*Austrolimnius* indet. (L)						
	Elmidae	Genus E sp74E (L)*						

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
	Elmidae L							
	Elmidae A							
	Elmidae							
	Haliplidae	OSS1L				size range for adults of family Haliplidae is <6 mm (Williams 1995)		
	Hydrophilidae	OSS1L				size range for adults of family Hydrophilidae is <1 mm to >40 mm (Williams 1995)		
	Noteridae	*Hydrocophus subfasciatus* (A)				size range for adults of family Noteridae is <10 mm (Williams 1995)		
DIPTERA								
	Ceratopogonidae	OSS1L				larvae <12 mm (Williams 1995)		
	Ceratopogonidae	OSS2L						
	Ceratopogonidae	OSS3L						
	Ceratopogonidae	OSS5L						
	Ceratopogonidae	OSS6L						
	Ceratopogonidae	OSS8L						
	Ceratopogonidae	OSS9L						
	Ceratopogonidae	OSS10L						
	Ceratopogonidae	OSS12L						
	Ceratopogonidae	indet.						

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
	Ceratopogonidae							
	Chironomidae	*Ablabesmyia notabilis*						
	Chironomidae	*Ablabesmyia* indet.						
	Chironomidae	*Chironomus* indet.				size range of larvae of family Chironomidae is up tp 20 mm (Hawking & Smith 1997)		
	Chironomidae	*Cladotanytarsus* indet.						
	Chironomidae	*Conochironomus* indet.						
	Chironomidae	*Cricotopus albitarsis*						
	Chironomidae	*Cricotopus brevicornis*						
	Chironomidae	*Cricotopus* indet.						
	Chironomidae	*Cryprochironomus griseidorsum*						
	Chironomidae	*Cryptochironomus* indet.						
	Chironomidae	*Dicrotendipes* lindae						
	Chironomidae	*Dicrotendipes* indet.						
	Chironomidae	*Djalmabatista* indet.						
	Chironomidae	*Kiefferulus* tinctus						
	Chironomidae	*Kiefferulus* indet.						
	Chironomidae	*Larsia albiceps*						
	Chironomidae	*Nanocladius* OSS1L						
	Chironomidae	*Nilotanypus* indet.						
	Chironomidae	*Parametriocnus* nr *ornaticornis*						
	Chironomidae	*Paratanytarsus* indet.						

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
	Chironomidae	*Paratendipes* indet.						
	Chironomidae	*Polypedilum leei*						
	Chironomidae	*Polypedilum nubifer*						
	Chironomidae	*Polypedilum watsoni*						
	Chironomidae	*Polypedilum* indet.						
	Chironomidae	*Procladius paludicola*						
	Chironomidae	*Rheocricotopus* indet.						
	Chironomidae	*Rheotanytarsus* indet.						
	Chironomidae	*Robackia* indet.						
	Chironomidae	*Stempellina* indet.						
	Chironomidae	*Stenochironomus* indet.						
	Chironomidae	*Stictochironomus* indet.						
	Chironomidae	*Tanytarsus* indet.						
	Chironomidae	*Thienemanniella* spA##						
	Chironomidae	*Thienemanniella* indet.						
	Chironomidae	*Thienemannimyia* indet.						
	Chironomidae	Chironominae (subfamily) indet.						
	Chironomidae	Orthocladiinae (subfamily) indet.						
	Chironomidae	Tanypodinae (subfamily) indet.						
	Chironomidae	indet. (L)						
	Chironomidae	indet. (P)						
	Chironomidae							

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
	Simuliidae	*Simulium papuense* (?)				size range for larvae of Simuliidae is up to 7 mm (Hawking & Smith 1997)		
	Simuliidae	*Simulium* indet.						
	Simuliidae	indet. (L)						
	Simuliidae	indet. (P)						
	Simuliidae							
	Tabanidae	*Tabanus* indet.						
	Tabanidae	indet.				size range for larval Tabanidae is up to 50 mm (Hawking & Smith 1997)		
	Tabanidae							
	Tipulidae	OSS1L				size range for larval Tipulidae is up to 50 mm (Hawking & Smith 1997)		
	Tipulidae	OSS4L						
	Tipulidae	indet.						
	Tipulidae							
EPHEMEROPTERA								
	Baetidae	*Baetis* sp1**		3.8		3	3.6	
	Baetidae	*Baetis* indet.						
	Baetidae	*Centroptilum* OSS1N	3.8	4.5	4.5	5.4		
	Baetidae	*Cloeon fluviatile*	4.6	5.7				
	Baetidae	Genus B sp1**	3.8	4.6	5	5.8		
	Baetidae	Genus B indet.						

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
	Baetidae	Genus C indet.			4.5	7.3		
	Baetidae	indet.						
	Baetidae							
	Caenidae	*Tasmanocoenis arcuata*	2.7	3.1	3	5.4		
	Caenidae	*Tasmanocoenis* spD**	1.9	2.3	2.1	2.8		
	Caenidae	*Tasmanocoenis* spE**		3	2.5	3		
	Caenidae	*Tasmanocoenis* spH**	1.7	2.2	2.2	2.5		
	Caenidae	*Tasmanocoenis* spJ**		2.5	2.6	3.2		
	Caenidae	*Tasmanocoenis* indet.						
	Caenidae	*Wundacaenis dostini*						
	Caenidae	indet.						
	Caenidae							
	Leptophlebiidae	*Thraulus* indet.	5	6	5.4	6.4		
	Leptophlebiidae	indet.	5	7				
	Leptophlebiidae							
HEMIPTERA								
	Corixidae	*Micronecta* indet.				size range for adult Corixidae is 5-10 mm (Hawking & Smith 1997)		
	Mesoveliidae	indet.				size range for adult Mesovelidae is up to 5 mm mm (Hawking & Smith 1997)		
LEPIDOPTERA								
	Pyralidae	OSS1L				18-26 mm for larval Pyralidae (Hawking & Smith 1997)		
	Pyralidae	OSS2L						

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
	Pyralidae	OSS9L						
	Pyralidae	OSS10L						
	Pyralidae	indet.						
	Pyralidae							
ODONATA								
	Coenagrionidae	*Austrocnemis maccullochi*			9	9.4		
	Coenagrionidae	indet.						
	Coenagrionidae							
	Corduliidae	*Hemicordulia intermedia*						
	Gomphidae	*Antipodogomphus neophytus*						
	Gomphidae	*Antipodogomphus* indet.						
	Gomphidae	*Austrogomphus mjobergi*				15.3		
	Gomphidae	*Austrogomphus* indet.						
	Gomphidae							
	Libellulidae	*Diplacodes haematodes*				12		
	Libellulidae	*Nannophlebia* indet.				14		
	Libellulidae	*Orthetrum caledonicum*				20		
	Libellulidae	indet.						
	Libellulidae							
	Anisoptera (suborder)	indet.						
	Zygoptera (suborder)	indet.						

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
TRICHOPTERA								
	Calamoceratidae	*Anisocentropus muricatus*						
	Ecnomidae	*Ecnomina* indet.				size range for larval Ecnomidae = up to 10 mm (Hawking & Smith 1997)		
	Ecnomidae	*Ecnomus* indet.						
	Ecnomidae	indet.						
	Ecnomidae							
	Hydropsychidae	*Asmicridea* sp3#				size range for larval Hydropsychidae = up to 25 mm (Hawking & Smith 1997)		
	Hydropsychidae	*Chematopsyche kakaduensis*						
	Hydropsychidae	*Cheumatopsyche suteri*						
	Hydropsychidae	*Cheumatopsyche wellsae*						
	Hydropsychidae	*Cheumatopsyche* indet.						
	Hydropsychidae							
	Hydroptilidae	*Hellyethira cubitans* (L)				size range for larval Hydroptilidae = up to 6.2 mm (Hawking & Smith 1997)		
	Hydroptilidae	*Hellyethira forficata* (L)						
	Hydroptilidae	*Hellyethira forficata* (P)						
	Hydroptilidae	*Hellyethira* indet. (L)						
	Hydroptilidae	*Hellyethira ramosa* (L)						
	Hydroptilidae	*Hellyethira ramosa* (P)						
	Hydroptilidae	*Hellyethira vernoni* (L)						

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
	Hydroptilidae	*Oxyethira* indet. (L)						
	Hydroptilidae	*Orthotrichia turrita*						
	Hydroptilidae	*Orthotrichia* indet. (L)						
	Hydroptilidae	*Orthotrichia* indet. (P)						
	Hydroptilidae	indet. (L)						
	Hydroptilidae	indet. (P)						
	Hydroptilidae							
	Leptoceridae	*Leptorussa* indet.						
	Leptoceridae	*Oecetis epekeina*				Size range for larval *Oecetis* = up to 7 mm (Hawking & Smith 1997)		
	Leptoceridae	*Oecetis* spA#						
	Leptoceridae	*Oecetis* spE#						
	Leptoceridae	*Oecetis* indet.						
	Leptoceridae	*Triaenodes* indet.						
	Leptoceridae	indet.						
	Triplectides	*ciuskus*				Size range for larval *Triplectides* = up to 20 mm		
	Triplectides	indet.						
	Leptoceridae							
	Philopotamidae	*Chimarra* spB #						
	Polycentropodidae	indet.						

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
ACARINA								
	Hydryphantidae	indet.						
	Hygrobatidae	*Australiobates* indet.						
	Hygrobatidae	indet.						
	Limnesiidae	indet.						
	Mideopsidae	indet.						
	Oribatida (suborder)	indet.						
	Oxidae	indet.				size range for adult Oxidae = up to 1.1 mm (Hawking & Smith 1997)		
	Torrenticolidae	indet.						
	Unionicolidae	indet.						
		indet.						
ACARINA								
DECAPODA								
	Atyidae	*Caridina gracilirostris*				size range for Atyidae = up to 35 mm (Hawking & Smith 1997)		
	Atyidae	*Caridinides wilkinsi*						
	Atyidae	indet.						
	Atyidae							
	Palaemonidae	*Macrobrachium bullatum*						75
	Palaemonidae	*Macrobrachium rosenbergi*						320
	Palaemonidae	*Macrobrachium* indet.						NA

Order/Class	Family	Genus and species	Imago min length (mm)	Imago max length (mm)	Nymph min mm	Nymph max mm	adult min. mm	adult max. mm
	Palaemonidae	indet.						
	Palaemonidae							
GASTROPODA								
	Planorbidae	*Amerianna* indet.						
NEMATODA		indet.						
OLIGOCHAETA								
	Enchytraeidae	indet.						
	Naididae	indet.						
	Tubificidae	indet.				size range for Tubificidae = up to 40 mm (Hawking & Smith 1997)		
	Magadrili (superorder)	indet.						
		indet.						
	Oligochaete							

indet = indeterminate

* Glaister 1991 # Wells 1991

** Suter 1992 ## Cranston 1991

NA not available

^measurements taken from Williams 1995 & will require specific measurements from Magela Creek samples

data from Ruth O'Connor species list for Magela Creek (pers comm)

Appendix 6 Magela Creek fish

Family	Species	common name	body size	min (cm)	max (cm)
Megalopidae	*Megalops cyprinoides*	Tarpon	20-50cm	20	50
Clupeidae	*Nematalosa erebi*	Bony bream	20-30cm	20	30
Osteoglossidae	*Scleropages jardinii*	Saratoga	50-70cm	50	70
Ariidae	*Arius leptaspis*	Salmon catfish (Fork-tailed catfish)	30-40	30	40
Plotosidae	*Neosilurus ater*	Black catfish	30cm	30	30
	Neosilurus hyrtlii	Hyrtl's catfish	10-20cm	10	20
	Porochilus rendahli	Rendahl's catfish	8-18cm	8	18
Belonidae	*Strongylura krefftii*	Longtom	30-40	30	40
Melanotaeniidae	*Melanotaenia nigrans*	Black-banded rainbowfish	2-4cm	2	4
	Melanotaenia splendida inornata	Chequered rainbowfish	2-5cm	2	5
Pseudomugilidae	*Pseudomugil gertrudae*	Spotted blue-eye	2-3cm	2	3
	Pseudomugil tenellus	Delicate blue-eye	2-3cm	2	3
Atherinidae	*Craterocephalus stercusmuscarum*	Fly-specked hardyhead	3-4cm	3	4
	Craterocephalus marianae	Mariana's hardyhead	4cm	2	4
Synbranchidae	*Ophisternon gutturale*	One-gilled eel	60cm	60	60
Centropomidae	*Lates calcarifer*	Barramundi	60-70cm	60	70
Ambassidae	*Ambassis agrammus*	Sailfin glassfish	3-4cm	3	4
	Ambassis macleayi	Reticulated glassfish	10cm	10	10
	Denariusa bandata	Penny fish	2-3cm	2	3
Terapontidae	*Amniataba percoides*	Banded grunter	9-10cm	9	10
	Hephaestus fuliginosus	Sooty grunter	20cm	20	20
	Leiopotherapon unicolour	Spangled grunter	10cm	10	10

Family	Species	common name	body size	min (cm)	max (cm)
	Syncomistes butleri	Sharp-nosed grunter	20-25cm	20	25
	Pingalla midgleyi	Midgely's grunter	8-14cm	8	14
Apogonidae	*Glossamia aprion*	Mouth almighty	10-20cm	10	20
Toxotidae	*Toxotes chatareus*	Common archer fish	8-12cm	8	12
Mugilidae	*Liza alata*	Ord River mullet (Diamond mullet)	35-45cm	35	45
Gobiidae	*Glossobius aureus*	Golden goby	14cm	14	14
	Glossobius giurus	Flathead goby	8-12cm	8	12
Eleotrididae	*Hypseleotris compressa*	Empire gudgeon (carp gudgeon)	5cm	5	5
	Oxyeleotris lineolata	Sleepy cod	30cm	30	30
	Oxyeleotris nullipora	Dwarf gudgeon	3cm	3	3
	Oxyeleotris selheimi	Black-banded gudgeon	5-10cm	5	10
	Mogurnda mogurnda	Purple-spotted gudgeon	5-10cm	5	10

Bishop et al 2001

Walden & Pidgeon 1998

Appendix 7 Magela Creek amphibians

Family	Species	common name	body size	male min (mm)	male max (mm)	female min	female max
Myobatrachidae	*Crinia bilingua*	Bilingual frog (Ratchet frog)	2cm	16	23	17	20
	Limnodynastes convexiusculus	Marbled frog	5.5cm	46	50	52	61
	Limnodynastes ornatus	Ornate burrowing frog	4.5cm	29	37	35	42
	Notaden melanoscaphus	Northern spadefoot toad	5.5cm	34	48	45	49
	Uperoleia innundata	Floodplains toadlet	2.5cm	23	28	24	30
Hylidae	*Cyclorana australis*	Giant frog	1.cm	71	79	71	105
	Cyclorana longipes	Long-footed frog	5.5cm	38	46	36	55
	Litoria bicolor	Northern dwarf tree-frog	3cm	23	27	25	29
	Litoria caerulea	Green tree-frog	10cm	66	77	60	110
	Litoria dahlii	Dahl's aquatic frog	7cm	49	63	59	71
	Litoria inermis	Peter's frog	3.5cm	24	33	30	37
	Litoria dorsalis	Javelin frog (dwarf rocket frog)	2cm	14	16	15	16
	Litoria nasuta	Rocket frog	5cm	33	45	36	55
	Litoria pallida	Pale frog	3.5cm	27	34	31	37
	Litoria rothi	Brown tree-frog (Roth's tree-frog)	5.5cm	37	48	45	57
	Litoria rubella	Desert tree-frog (Red tree-frog)	3.5cm	28	37	34	43
	Litoria tornieri	Tornier's frog	3.5cm	28	36	27	34
	Litoria wotjulumensis	Wotjulum frog	7.5cm	33	38	45	70
Microhylidae	*Sphenophryne adelphe*	Northern Territory frog	2cm	17	19	19	22
	Bufo marinus	cane toad		75	110	90	250

Family	Species	common name	body size	male min (mm)	male max (mm)	female min	female max
	Rock-dwelling species						
	Litoria coplandi	Copland's rock frog		29	36	39	42
	Litoria meirana	Rockhole frog		16	20	18	21
	Litoria personata	Masked frog		28	29	31	33
	Uperoleia arenicola	Jabiru toadlet		18	23	NA	NA
	Megistolotis lignarius	Woodworker frog		43	62	47	61

NA=no available data

Barker et al 1995 A Field Guide to Australian Frogs

Appendix 8 Magela Creek reptiles

Family	Species	common name	body size	min (cm)	max (cm)
Crocodylidae	*Crocodylus johnstoni**	Freshwater crocodile	300cm	300	300
	*Crocodylus porosus**	Estuarine crocodile	500-700cm	500	700
Chelidae	*Chelodina rugosa**	Northern snake-necked turtle	40cm (shell length)	40	40
	Chelodina sp. Nov*		?		
	*Elseya dentata**	Northern snapping turtle	35cm (shell length)	35	35
	*Elseya latisternum**	Saw-shelled turtle	20cm (shell length)	20	20
	*Emydura victoriae (=australis)**	Northern yellow-faced turtle	30cm (shell length)	30	30
Agamidae	*Ctenophorus caudicinctus*	Ring-tailed dragon	10cm (snout-vent length)	10	10
	Chelosonia brunnea	Chameleon dragon	9cm (snout-vent length)	9	9
	Chlamydosaurus kingii	Frillneck	22cm (snout-vent length)	22	22
	Diporiphora bilineata	Two-lined dragon	10cm (snout-vent length)	10	10
	Lophognathus gilberti		10cm (snout-vent length)	10	10
Gekkonidae	*Diplodactylus ciliaris*	Spiny-tailed gecko	8.5cm (snout-vent length)	8.5	8.5
	Gehydra australis	Northern Dtella	7cm (snout-vent length)	7	7
	Gehyra nana		5cm (snout-vent length)	5	5
	Gehyra pamela		7cm (snout-vent length)	7	7
	Heteronotia binoei	Bynoe's gecko	5cm (snout-vent length)	5	5
	Nephrurus asper		10cm (snout-vent length)	10	10
	Oedura gemmata		10cm (snout-vent length)	10	10
	Oedura marmorata	Marbled velvet gecko	9cm (snout-vent length)	9	9
	Oedura rhombifer		8cm (snout-vent length)	8	8
	Pseudothecadactylus lindneri	Giant cave gecko	10cm (snout-vent length)	10	10

Family	Species	common name	body size	min (cm)	max (cm)
Pygoponidae	*Delma borea*		8cm (snout-vent length)	8	8
	Lialis burtonis	Burton's snake lizard	25cm (snout-vent length)	25	25
Scincidae	*Carlia amax*		3.5cm (snout-vent length)	3.5	3.5
	Carlia gracilis		3.5cm (snout-vent length)	3.5	3.5
	Carlia triacantha		4.5cm (snout-vent length)	4.5	4.5
	Cryptoblepharus plagiocephalis		4.5cm (snout-vent length)	4.5	4.5
	Ctenotus arnhemensis		5.5cm (snout-vent length)	5.5	5.5
	Ctenotus borealis		11.5cm (snout-vent length)	11.5	11.5
	Ctenotus coggeri		8cm (snout-vent length)	8	8
	Ctenotus essingtini		6cm (snout-vent length)	6	6
	Ctenotus gagadju		5cm (snout-vent length)	5	5
	Ctenotus inornatus		9cm (snout-vent length)	9	9
	Ctenotus storri		4cm (snout-vent length)	4	4
	Ctenotus vertebralis		5.5cm (snout-vent length)	5.5	5.5
	Egernia frerei		18cm (snout-vent length_	18	18
	Menetia alanae		2.5cm (snout-vent length)	2.5	2.5
	Menetia concinna		3cm (snout-vent length)	3	3
	Menetia greyii		3cm (snout-vent length)	3	3
	Morethia ruficauda		3.5cm (snout-vent length)	3.5	3.5
	Morethia storri		3.5cm (snout-vent length)	3.5	3.5
	Notoscincus ornatus wotjulum		3cm (snout-vent length)	3	3
	Proablepharus tenuis		3cm (snout-vent length)	3	3
	Glaphyromorphus darwiniensis		5.5cm (snout-vent length)	5.5	5.5

Family	Species	common name	body size	min (cm)	max (cm)
	Glaphyromorphus isolepsis		7cm (snout-vent length)	7	7
	Tiliqua scincoides	Eastern blue-tongued lizard	30cm (snout-vent length)	30	30
Varanidae	*Varanus baritji*		60cm (total length)	60	60
	*Varanus gouldii**	Sand goanna (Gould's goanna)	160cm	160	160
	*Varanus mertensi**	Merten's water monitor	100cm	100	100
	*Varanus mitchelli**	Mitchell's water monitor	60cm	60	60
	*Varanus panoptes**	Northern sand goanna	120cm	120	120
	Varanus timorensis	Spotted tree monitor	60cm (total length)	60	60
	Varanus tristis		80cm (total length)	80	80
Acrochordidae	*Acrochordus arafurae**	Filesnake	250cm	250	250
Boidae	*Liasis childreni*	Children's python	75-100cm	75	100
	*Liasis fuscus**	Water python	200-300cm	200	300
	*Liasis olivaceus**	Olive python	400cm	400	400
	Morelia oenpelliensis	Oenpelli python	200cm	200	200
	Morelia spilota	Carpet and diamond pythons	200-400cm	200	400
Colubridae	*Boiga irregularis*	Brown tree snake	140-200cm	140	200
	Dendrelaphis punctulata	Common tree snake	120-200cm	120	200
	*Enhydris polylepis**	Macleay's water snake	60-80cm	60	80
	*Stegonotus cucullatus**	Slaty-grey snake	130cm	130	130
	*Tropidonophis mairii**	Keelback or freshwater snake	50-100cm	50	100
Elapidae	*Acanthophis praelongus*	Northern death adder	40-70cm	40	70
	Rhinoplocephalus pallidiceps	Northern small-eyed snake	50cm	50	50
	Demansia atra	Black whip snake	100cm	100	100

Family	Species	common name	body size	min (cm)	max (cm)
	Demansia olivacea		80cm (total length)	80	80
	Suta punctata	Little spotted snake	40cm (total length)	40	40
	*Pseudechis australis**	King brown snake	200cm	200	200
	Furina ornata	Orange-naped snake	70cm	70	70
	Pseudonaja nuchalis	Western brown snake	150cm	150	150
	Simoselaps semifasciatus	Half-girdled snake	30-40cm	30	40
	Vermicella multifasciata	Northern bandy-bandy	60-100cm	60	100
Typhlopidae	*Ramphotyphlops grypus*		35-45cm	35	45
	Ramphotyphlops polygrammicus		25-40cm	25	40
	Ramphotyphlops unguirostris		40-70cm	40	70

* large reptiles present in riparian and floodplain habitats of the Magela Creek system (Finlayson et al 1990a)

HG Cogger 1996. *Reptiles and amphibians of Australia*. Reed Books, Australia. 796 p

Appendix 9 Magela Creek birds

Family	*Species*	common name	body size	min (cm)	max (cm)
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican	150-190cm	150	190
Anhingidae	*Anhinga melanogaster*	Darter	86-94cm	86	94
Phalacrocoracidae	*Phalacrocorax melanoleucos*	Little Pied Cormorant	58-64cm	58	64
	Phalacrocorax varius	Pied Cormorant	66-80cm	66	80
	Phalacrocorax sulcirostris	Little Black Cormorant	58-64cm	58	64
Ardeidae	*Ardea pacifica*	White-necked Heron (Pacific heron)	76-106cm	76	106
	Ardea picata	Pied Heron	43-50cm	43	50
	Ardeola ibis	Cattle Egret	48-53cm	48	53
	Ardea alba	Great Egret	76-100cm	76	100
	Egretta garzetta	Little Egret	56-65cm	56	65
	Ardea intermedia	Intermediate Egret	56-70cm	56	70
	Ardea novaehollandiae	White-faced Heron		66	70
	Butorides striatus	Striated Heron		43	51
	Nycticorax caledonicus	Nankeen Night Heron	56-64cm	56	64
Ciconiidae	*Ephippiorhynchus asiaticus*	Black-necked Stork	140cm	140	140
Plataleidae	*Plegadis falcinellus*	Glossy Ibis	48-61cm	48	61
	Threskiornis aethiopica	Sacred Ibis	65-76cm	65	76
	Threskiornis spinicollis	Straw-necked Ibis	58-76cm	58	76
	Platalea regia	Royal Spoonbill	74-80cm	74	80
	Platalea flavipes	Yellow-billed Spoonbill	76-92cm	76	92
Anatidae	*Anseranus semipalmata*	Magpie Goose	75-90cm	75	90
	Aythya australis	Hardhead		45	60

Family	*Species*	common name	body size	min (cm)	max (cm)
	Dendrocygna arcuata	Wandering Whistling Duck	55-61cm	55	61
	Dendrocygna eytoni	Plumed Whistling Duck	41-62cm	41	62
	Tadorna radjah	Radjah Shelduck (Burdekin Duck)	40-60cm	40	60
	Anas superciliosa	Pacific Black Duck	48-60cm	48	60
	Anas gracilis	Grey Teal	40-46cm	40	46
	Malacorhynchus membranaceus	Pink-eared Duck	38-45cm	38	45
	Nettapus pulchellus	Green Pygmy Goose	34-38cm	34	38
Rallidae	*Porzana pusilla*	Baillon's Crake	15-16cm	15	16
	Porzana cinereus	White-browed Crake	17-18cm	17	18
	Porphyrio porphyrio	Purple Swamphen		44	48
Gruidae	*Grus rubicundus*	Brolga	70-130cm	70	130
Jacanidae	*Irediparra gallinacea*	Comb-crested Jacana	20-26cm	20	26
Charadriidae	*Vanellus miles*	Masked Lapwing	35-38cm	35	38
	Erythrogonys cinctus	Red-kneed Dotterel	17-19cm	17	19
	Elseyornis melanops	Black-fronted Dotterel	16-18cm	16	18
Recurvirostridae	*Himanoptus himanoptus*	Black-winged Stilt	33-38cm	33	38
Scolopacidae	*Numenius minutus*	Little Curlew	30-36cm	30	36
	Tringa stagnatilis	Marsh Sandpiper	22-25cm	22	25
	Calidris acuminata	Sharp-tailed Sandpiper	17-21cm	17	21
	Calidris ferruginea	Curlew Sandpiper	20-22cm	20	22
Glareolidae	*Stilitia isabella*	Australian Pratincole	22-24cm	22	24
Laridae	*Childonias hybrida*	Whiskered Tern	25-27cm	25	27
	Sterna nilotica	Gull-billed Tern	37-43cm	37	43

Family	*Species*	common name	body size	min (cm)	max (cm)
	Sterna caspia	Caspian Tern		48	55
	Childonias leucopterus	White-winged Tern		22	24
Podicipedidae	*Tachybaptus novaehollandiae*	Australasian Grebe		23	26
Alcedinidae	*Alcedo pusilla*	Little Kingfisher		11.5	13
	Alcedo azurea	Azure Kingfisher		17	19
Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea Eagle	70-90cm	70	90

G Pizzey & F Knight 1997. *Field Guide to the Birds of Australia*. HarperCollins Publishers Pty Limited 576 p+B10

Appendix 10 Magela Creek mammals

Family	*Species*	common name	body length male (min) cm	male (max) cm	body length female (min)	female (max)	weight male (min) g	weight male (max) g	weight female (min) g	Weight female (max) g
Dasyuridae	*Dasyurus hallucatus*	Northern quoll	12.3	31	12.5	30	400	900	300	500
	Antechinus bellus	Fawn antechinus	12.1	14.8	11	13	42	66	26	41
	Sminthopsis virginiae	Red-cheeked dunnart	8.1	12.6	15	80				
	Planigale maculata	Common planigale	7	10	7.1	8.7	6	22	7	15
	Planigale ingrami	Long-tailed planigale	5.5	6.3	5.7	6.5	3.9	4.5	4.2	4.5
Peramelidae	*Isoodon macrourus*	Northern brown bandicoot	30	47	30	41	500	3100	500	1700
Macroponidae	*Macropus agilis*	Agile wallaby	71.5	85	59.3	72.2	1600	2700	900	1500
	Macropus antilopinus	Antilopine wallaroo	96.5	120	77.8	83.5	3000	4900	1600	2000
Muridae	*Hydromys chrysogaster*	Water rat	23.1	34.5	24.5	37	400	1275	340	992
	Melomys burtoni	Grassland melomys	13	14	12.5	13	50	65		
	Pseudomys nanus	Western chestnut mouse	80	140			25	50		
	Pseudomys delicatulus	Delicate mouse	55	75			6	15		
	Rattus tunneyi	Pale field rat	11.8	19.4			42	165		
	Rattus colleti	Dusky rat	6.5	21.1			22	213		
Pteropodidae	*Pteropus alecto*	Black flying-fox	24	26			500	700		
	Pteropus scapulatus	Little red flying-fox	19.5	23.5			300	600		
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied sheathtail-bat	7.6	8.7		30	60			
	Saccolaimus saccolaimus	Naked-rumped sheathtail-bat	9	10			40	50		
	Taphozous georgianus	Common sheathtail-bat	6.7	7.9			12	27		
	Taphozous kapalgensis	White-striped sheathtail-bat	7.5	8.5			26			

Family	***Species***	**common name**	**body length male (min) cm**	**male (max) cm**	**body length female (min)**	**female (max)**	**weight male (min) g**	**weight male (max) g**	**weight female (min) g**	**Weight female (max) g**
Megadermatidae	*Macroderma gigas*	Ghost bat	10	13			140	165		
Hipposideridae	*Hipposideros ater*	Dusky horseshoe-bat	4.5				8	10		
	Hipposideros diadema	Diadem horseshoe-bat	7.5	8.5			30	50		
	Rhinonicteris aurantius	Orange horseshoe-bat	4.5	5.3			8	10		
Molossidae	*Chaerephon jobensis*	Northern mastiff-bat	8	9			23	30		
	Mormopterus beccarii	Beccari's mastiff-bat	5.5	6.5			13	19		
Vespertilionidae	*Miniopterus schreibersii*	Common bentwing-bat	5.2	5.8			13	17		
	Nyctophilus arnhemensis	Arnhem Land long-eared bat	4.3	5.2			6	8		
	Chalinolobus gouldii	Gould's wattled bat	6.5	7.5			10	18		
	Chalinolobus nigrogriseus	Hoary bat	4.5	5.5			7.5	10		
	Myotis moluccarum	Northern myotis								
	Pipistrellus adamsi	Cape York pipistrelle								
	Pipistrellus westralis	Western pipistrelle								
	Scotorepens sanborni	Northern broad-nosed bat	4.8	5.2			6	8		
	Vespadelus caurinus	Western cave bat								
Canidae	*Canis familiaris dingo*	Dingo	86	98	88	89	1180	1940	960	1600
Alien species										
	Bos indicus	cattle								
	Bos taurus	cattle								
	Bubalus bubalus	water buffalo								
	Sus scrofa	feral pig								
	Equus asinus	donkey								

Family	*Species*	common name	body length male (min) cm	male (max) cm	body length female (min)	female (max)	weight male (min) g	weight male (max) g	weight female (min) g	Weight female (max) g
	Equus caballus	horse								
	Felis catus	cat								
	Rattus rattus	black rat								

R Strahan ed 1983. The Australian Museum Complete book of Australian Mammals. Angus & Roberton Publishers, 530 p