PUTTING NEW ZEALAND MONOCOTYLEDON GENERA IN THEIR PLACE

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In CBSJ 32, 1998, I pointed out what a chequered career the genus *Cordyline* had had with respect to its family placement. Two books arrived in the University of Canterbury library in 1999 (Kubitzki 1998a, 1998b) which provide up-to-date perspectives on the delimitation and relationships of all monocotyledon families (and their genera) except the Poaceae (grasses) and Orchidaceae (orchids). Many authors (one or more per family), were involved in the writing of these volumes. The criteria used in the classifications include details of structure and development of the whole plants, as well as their inflorescences, flowers, fruit, seeds, embryos and pollen. Other information on cell microstructure, chromosomes, chemistry and molecular biology is also used. The main content of the two volumes is a systematic coverage, family by family, of each genus. In some of the treatments the genera are grouped into sections. Presumably the grass and orchid families will be covered in one or more future volumes.

The treatment differs in various ways from that in the standard New Zealand flora for indigenous monocotyledons except grasses, Moore & Edgar (1970). According to Kubitzki (1998a), New Zealand has no indigenous members of Liliaceae. All of our lily-like genera (and *Phormium*) are placed in the Hemerocallidaceae, or other families. There are a few other shocks. *Baumea* (Cyperaceae) is now, holus bolus, placed in *Machaerina*, and a new genus *Apodasmia* has been erected for what we have known as *Leptocarpus* (Restionaceae). Nevertheless many families and the genera they include (as outlined by Moore & Edgar, 1970) remain unchanged. The same applies to the limits of almost all of the genera.

This article lists the indigenous monocotyledon families and genera (except grasses and orchids) recognised for New Zealand in the Kubitzki volumes. It also indicates, briefly, the distribution of each genus and of all representatives of each family, as a whole.

Family According to:		New Zealand Genera	World Distribution of Genus	World Distribution of all Family Representatives
Zubitzki 1998a	**Moore & Edgar, 1970**			
Asphodelaceae	Liliaceae	*Bulbinella*	South Africa, N.Z.	Europe, Africa, Madagascar, W. Asia, E. Asia, Australia, N.Z.
Asteliaceae	Liliaceae	*Astelia*	Reunion, Mauritius, New Guinea, New Caledonia, Fiji, Samoa, E. Australia, Tasmania, N.Z., Tahiti, Marquesas, Hawaii, Chile, Falklands	As for *Astelia*
	Liliaceae	*Collospermum*	Fiji, Samoa, N.Z.	
Burmanniaceae	Same	*Thismia*	Tropical Asia, Japan, E. Australia, N.Z., trop. America, E. USA	Widespread trop., warm temp.
Colchicaceae	Liliaceae	*Iphigenia*	Africa, Madagascar, Socotra, India, Australia, N.Z.	Temp., subtrop., trop., Eurasia, Africa, S.E. Asia, Australia, N.Z.
Hemerocallidaceae	Agavaceae	*Phormium*	N.Z., Norfolk Is.	Widespread Eurasia, E. Africa, Madagascar, Australia, N.Z., Pacific incl. Hawaii, Andes
	Liliaceae	*Herpolirion*	E. Australia, Tasmania, N.Z.	
	Liliaceae	*Dianella*	Madagascar, Mascarene Is., India, S.E. Asia, Malesia, Australia, N.Z., Pacific Is. to Hawaii	
	Liliaceae	*Xeronema**	New Caledonia, N.Z.	
* anomalous – may eventually be placed in its own family				
Hypoxidaceae	Same	*Hypoxis*	Africa, Asia, Australia, N.Z.	Trop., sub-trop., mainly S. Hem., Africa, Asia, Australia, N.Z., N. & S. America
Iridaceae	Same	*Libertia*	New Guinea, Australia, N.Z., Andes	Worldwide

Lomandraceae	Liliaceae	*Arthropodium*	Madagascar, Mascarene Is., New Guinea, New Caledonia, N.Z., Pacific Is., S. America	As for *Arthropodium* and *Cordyline*
	Agavaceae	*Cordyline*	Mascarene Is., Himalaya, S.E. Asia, Malesia, New Guinea, New Caledonia, Australia, N.Z., Pacific Is., S. America	
Luzuriagaceae	Philesiaceae	*Luzuriaga*	N.Z., Andes, Falklands	Australia, N.Z., Andes, Argentina, Falklands
Pandanaceae	Same	*Freycinetia*	India, Malesia, N. Australia, N.Z., Pacific Is. to Marquesas, Hawaii	Trop. Africa, Indian Ocean Is., S. Asia, Malesia, New Guinea, Australia, N.Z.
Smilacaceae	Same	*Ripogonum*	New Guinea, E. Australia, N.Z.	Widespread, trop., sub-trop., warm temp.
Zubitzki 1998b				
Centrolepidaceae	Same	*Centrolepis*	S.E. Asia, Malesia, New Guinea, Australia, N.Z.	S.E. Asia, Malesia, New Guinea, Australia, N.Z., S. America
	Same	*Gaimardia*	New Guinea, Tasmania, N.Z., S.S. America, Falkland Is.	
Cyperaceae	Same	*Bolboschoenus* (*Scirpus* in M&E)	Widespread	Worldwide
		Schoenoplectus (*Scirpus* in M&E)	Widespread	
		Eleocharis	Worldwide	
		Fimbristylis	Widespread trop. to warm temp.	
		Desmoschoenus	N.Z.	
		Isolepis (*Scirpus* in M&E)	Widespread	
		Cyperus	Widespread trop. to temp.	
		Schoenus	Widespread	

		Oreobolus	Malesia, E. Australia, Tasmania, N.Z., Tahiti, Hawaii, C. America, Andes, S.S. America, Juan Fernandez	
		Carpha	C. Africa, S. Africa, Madagascar, Mascarene Is., Japan, New Guinea, E. Australia, N.Z., Chile	
		Tetraria	C. & E. Africa, S. Africa, ?Borneo, S.W. Australia, N.Z.	
		Gahnia	China, Japan, S.E. Asia, Malesia, New Guinea, Australia, N.Z., Pacific Is. to Hawaii	
		Morelotia	N.Z., Hawaii	
		Machaerina (incl. *Baumea* of M&E)	Africa, Madagascar, Mascarene Is., India, Japan, S.E. Asia, Malesia, New Guinea, New Caledonia, E. Australia, N.Z., Pacific Is. to Hawaii, trop. S. America, Caribbean	
		Lepidosperma	S.E. Asia, Malesia, New Caledonia, Australia, N.Z., Pacific Is.	
		Uncinia	Malesia, Australia, N.Z., Pacific Is. to Hawaii, C. America, Andes, Caribbean, Juan Fernandez, Tristan da Cunha	
		Carex	Worldwide	
Hydatellaceae	Centrolepidaceae	*Hydatella*	W. Australia, N.Z.	As for *Hydatella*
Juncaceae	Same	*Juncus*	Worldwide	Worldwide
		Luzula	Worldwide	
		Marsippospermum	N.Z., S.S. America	
		Rostkovia	N.Z., Subantarctic Is., Ecuador, S.S. America, S. Georgia, Tristan da Cunha	

Juncaginaceae	Same	*Triglochin*	Widespread, temp.	Widespread, temp.
Lemnaceae	Same	*Lemna*	Worldwide	Worldwide (not deserts, polar regions)
		Spirodela	Worldwide	
		Wolffia	Widespread	
Palmae (often known as Arecaceae)	Same	*Rhopalostylis*	N.Z. incl. Chatham Is., Norfolk Is., Raoul Is.	Widespread trop., subtrop., warm temp.
Potamogetonaceae	Same	*Potamogeton*	Widespread	Widespread espec. temp.
Restionaceae	Same	*Empodisma* (*Calorophus* in M&E)	S.W. and S.E. Australia, N.Z.	E. Africa, S. Africa, Madagascar, S.E. Asia, Australia, N.Z., S.S. America
		Apodasmia (*Leptocarpus* in M&E)	S.W. & E. Australia, N.Z., Chile	
		Sporadanthus	S.W. & S.E. Australia, N.Z.	
Ruppiaceae	Same	*Ruppia*	Widespread	Widespread
Typhaceae	Sparganiaceae	*Sparganium*	N. Hem., Arctic to temp., Mts of Sumatra, New Guinea, E. Australia, N.Z.	
		Typha	Widespread	
Zannichelliaceae	Same	*Lepilaena*	S. Australia, Tasmania, N.Z.	Widespread
		Zannichellia	Widespread	
Zosteraceae	Same	*Zostera*	Widespread	Widespread

REFERENCES

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Zubitzki, K. 1998a, 1998b: *The Families and Genera of Vascular Plants. Vol. III* Flowering Plants; Monocotyledons. Liliaceae (except Orchidaceae). *Vol. IV* Flowering Plants; Monocotyledons. Alismatanae and Commelinanae (except Gramineae). Springer Verlag, Berlin

NOTE: BAMBOO FLOWERING IN A CHRISTCHURCH GARDEN

Many young bamboo plants, which apparently belong to a species of *Himalayacalamus*, (det. Bill Sykes), have sprung up in our Avonhead garden over the last few years. Their origin harks back to flowering of a clump of this relatively spot-bound and very attractive tall grass in the summers of three consecutive years, 1995-96, 1996-97 and 1997-98. The first two of these flowering episodes were major events, with many culms blooming. By the end of 1997 much of the bamboo clump (the original having been purchased at a local nursery about 20 years before) had died off and only a few flower heads appeared.

The original plant was grown in a very dry position on the north side of our house. Each year its three to three and a half metre tall stems were trimmed back, as they extended through our upstairs decking. Stems were cut from time to time to furnish rods for garden markers and stakes.

Very large numbers of seeds were present on the bamboo after the 1995-96 and 1996-97 flowerings. The seeds were greedily eaten by sparrows, while still on their parent, or after falling to the ground, but plenty survived to germinate. The seeds seem to be very viable, as hundreds of seedlings have appeared. I have potted quite a number and given them away. It's interesting to know that bamboo flowering can occur for several years running.

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