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Records on the distribution of Ptychanthoideae (subfam. of Lejeuneaceae, Hepaticae) in Australia

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Abstract. Three species are new for the Northern Territory of Australia: *Acrolejeunea securifolia* (Nees) Steph. ex Watts ssp. *securifolia*, *Archilejeunea planiuscula* (Mitt.) Steph. and *Mastigolejeunea ligulata* (Lehm. & Lindenb.) Schiffn., and one for Queensland: *Thysananthus australis* (Steph.) B. Thiers & Gradst. New records of species are given, which were previously known only from one or very few localities, including: *Caudalejeunea cristiloba* (Steph.) Gradst. and *Lopholejeunea plicatiscypha* (Taylor) Steph.

INTRODUCTION

The liverwort species of Ptychanthoideae enumerated here were collected in Queensland, New South Wales, and in the Northern Territory by T. Pócs and S. Pócs, accompanied and guided by Australian colleagues, during the period of 1999-2001. The expedition was conducted within the framework of the Flora of Australia project entitled „Taxonomic Revision and Phytogeographic Evaluation of the genus *Frullania* Raddi (Hepaticae) in Australia and the Adjacent islands“ and was funded mainly by the Australian Biological Resources Study (ABRS).

One set of voucher specimens is deposited in EGR, and another set goes to the Australian herbaria concerned (Canberra: CANB; Indooroopilly: BRI; Palmerston: DNA; Sydney: NSW).

KEY TO ABBREVIATIONS

The genera and the species are arranged in alphabetical order. Within each species, the listing of specimens follows the geographical sequence which is presented below in abbreviated forms.

QLD: Queensland
NSW: New South Wales
NT: Northern Territory

An asterisk mark (*) before the above geographical abbreviation means that the taxon is new for that state. For each species record are given the ecological conditions, altitudinal distribution, and substrates, which are abbreviated as follows:

ct: corticolous, on bark
r : on rocks
P : on Palm base, trunk and stem
Pa : on *Pandanus* bark
ph : epiphyllous, on living leaves
rd : radicolous, on tree roots
ra : ramicolous, on twigs, branches, liana thinner than 4 cm in diameter
ru-ir : on irrigated rock
li : lignicolous, on decaying wood
ru : rupicolous
Ar : on Araucaria bark

The names of collectors are given also in abbreviated forms:

P: Tamás and Sarolta Pócs
S: Heinar Streimann
B: Elisabeth A. Brown

For each species, the abbreviated forms of collector names (more than one were involved) are followed by the specimen number, each of them includes the year of collection (two digits), the serial number of locality within the year concerned (two or three digits), and finally after the slash (/), one or two letters indicating the different specimens from the same locality.

All specimens were identified by the author. Taxonomic or phytogeographic annotations follow at the end of the locality records of each species. The patterns of distribution are given mainly according to Gradstein (1991), Thiers & Gradstein (1989), and Zhu & So (2001) while the collection localities are listed according to their serial numbers shown in Appendix 1.

ANNOTATED ENUMERATION OF THE SPECIES

The species records were checked against the list of Australian liverworts by Scott and Bradshaw (1986), the Southern Australian liverworts by Scott (1985), and the revision of Australian Ptychanthoideae by Thiers and Gradstein (1989).

Acrolejeunea aulacophora (Mont.) Steph. - **QLD.:** *PS 9970/L.* 40 m ct., ru.; *PS 9980/A.* 2-3 m ct.; *PS 9988/K.* 2-3 m Pa.; *PS 9997/E.* 240-310 m Ar.; *PS 99130/G.* 690 m ct.; *P 01083/AB* 720 m ct.

This species occurs also in East Africa, Indomalesia and New Caledonia and is confined to coastal environments and is a remarkably disjunctive Afro-Austral-Pacific species (Gradstein 1975).

Acrolejeunea pycnoclada (Taylor) Schiffn. ssp. *pycnoclada* - **QLD.:** *PS 9970/L.* 40 m ct., ru.; *S 9996/E.* 230 m ct.; *S 9998/L.* 270 m ct.; *PS 99100/J.* 240 m ct.; *PS 99101/L.* 570-620 m ru.; *PS 99103/G.* 240 m ct.

This species has a broad palaeotropical distribution.

Acrolejeunea securifolia (Nees) Steph. ex Watts ssp. *securifolia* - **QLD.:** *PS 9968/E.* 910 m ct.; *PS 9977/C.* 885 m ct.; *PS 9983/V.* 85 m ct.; *PS 9985/B.* 70 m ct.; *PS 9988/J.* 2-3 m ct.; *PS 9991/K.* 20 m ct.; *PS 99100/K.* 240 m ct.; *PS 99101/A,B.* 570-620 m ru.; *PS 99137/R.* 300 m li; *P sine No.* 250-350 m ct.; *P 01078/O* 720 m ct.; *P 01081/A* 845 m rd.; *P 01083/A* 720 m ct.; *P 01090/G* s.l., ra; *P 01091/O* 1520-1560 m ct.; *P 01095/C* 10 m ct.; *P 01100/Z* 465 m ct.; *P 01104/A* 5 m ct.; *P 01106/AG* 540 m li. - **NSW.:** *PB 0013/A.* 910 m ct.; *PB 0021/B, H.* 1-2 m ct.; *PB 0025/F.* 250 m ct.; *PB 0027/B* 6-8 m ct.; *PB 0029/D* 110 m ct.; *PB 0040/L* 1050 m ct.; *PB 0041/D* 2 m ct.; *PB 0048/AA* 350 m ct.; *PB Sine No.* 250-350 m ct. - ***NT.:** *P 01037/H* 140-150 m ct.; *P 01038/B* 110-130 m ru.; *P 01042/G, J* 50 m ct.; Pa., *P 01043/H* 20-90 m Pa.; *P 01048/B* 30-35 m li.; *P 01049/B* 30 m Pa.

Endemic and widespread in Australasia, occurring mainly along the coast at sea level.

Archilejeunea polymorpha (Sande Lac.) B. Thiers & Gradst. - **QLD.**: *PS 9966/G*. 770 m ct.; *PS 99126/A*. 30 m ct.; *P 01121/X* 840-870 m ra. -**NSW.**: *PB 0023/H, L*. 120 m ct.

This species has a typical Indo-Pacific distribution.

Archilejeunea planiuscula (Mitt.) Steph. - **QLD.**: *PS 9997/AF* 240-310m ct.; *PS 99125/F*. 28 m ct. -**NSW.**: *PB 009/C*. 600-730 m ct.; *PB 0023/B*. 120 m rd. -***NT.**: *P 01052/B* 40 m Pa.

This species is known from many localities in the Indo-Pacific region.

Caudalejeunea recurvistipula (Gottsche) Schiffn. - **QLD.**: *PS 9986/AC*. 110-160 m ph.; *PS 9989/G*. 5 m ph.; *PS 9990/N*. 1-2 m ph.; *PS 99105/AC*. 85 m ph.; *PS 99117/AJ*. 375 m ph.; *P 01090/AC* s. l. ph.; *P 01090/AB* s.l., ph.

This is the most common epiphyllous ptychanthoid *Lejeuneaceae* in Australia and in the Indomalaysian-Oceanian region; originally reported from Australia by Verdoorn. (1934b).

Caudalejeunea cristiloba (Steph.) Gradst. - **QLD.**: *P 01090/A*. sea level, ra.

This collection made at the east coast of northern Queensland is a confirmation of the existence of this taxon at its only Australian locality of mangrove forest in Russell River Nat. Park, E of Bellenden Ker Range (North Coast Region) reported by Thiers & Gradstein (1989). Outside Australia the species is known in Burma, Andaman, Thailand, Singapore, Borneo and Samoa (Mizutani 1988), Ambon, Sri Lanka (Zhu & So 2001).

Lopholejeunea subfusca (Nees) Schiffn. - **QLD.** *PS 9979/C*. 340 m ru.; *PS 9983/AG*. 85 m ph.; *PS 9987/J*. 140 m ct.; *PS 9989/N*. 5 m ph.; *PS 9991/O*. 20 m ct.; *PS 9997/AE, R*. 240-310 m ct.; *PS 99103/H*. 240 m Pa.; *PS 99109/AE, BQ*. 1240 m ct., ph.; *P 01079/AA, D, G, O* 1234 m ph., ct.; *P 01090/E, P, S* s.l., ra.; *P 01095/B* 10 m ct.; *P 01098/B, K* 185 m ru.; *P 01109/S, V* 900 m ct.; *P 01116/G*. 890 m ct.; *P 01119/Z, Y*

768-825 m ru. - **NSW.**: *PB 0023/B*. 120 m rd.; *PB 0030/G*. 250-350 m ra.

A widespread pantropical species.

Lopholejeunea eulopha (Taylor) Schiffn. - **QLD.**: *PS 9983/K, M, N, P*. 85 m ct.; *PS 9986/J, F*. 110-160 m ct.; *PS 9997/AG, W*. 240-310 m ct.; *PS 99114/AS*. 940-1000 m ph.; *P 01084/A, C, D* 950 m ct.; *P 01091/W* 1520-1560 m ra.; *P 01093/T* 1370-1420 m ct.; *P 01098/A, E* 185 m ru., ct.; *P 01099/A, D*. 365 m ru., li.; *P 01102/G*. 800 m ct.; *P 01107/C*. 300-480 m ct.; *P 01119/F, K, L, R*. 765-825 m ct., li.

This species is widely distributed in Asia and Africa, and rather frequent in Queensland.

Lopholejeunea muelleriana (Gottsche) Schiffn. var. *australis* (Steph.) B. Thiers & Gradst. - **NSW.**: *PB 0032/A* 200 m ru.; *PB 0039/E* 750 m ru.

This is an Australian endemic variety, known from Queensland to New South Wales.

Lopholejeunea plicatiscypha (Taylor) Steph. - **NSW.**: *PB 0048/M* 350 m ra.

This is an Australian endemic, known from Norfolk Island, Queensland and New South Wales.

Lopholejeunea loheri Steph. - **QLD.**: *P 01079/R* 1234 m ct.; *P 01092/E* 1420-1520 m ct.; *P 01108/C*. 260-300 m ct.; *P 01109/X, Y*. 900 m ct.

It is currently known only from northern Queensland; outside Australia it is known also from the Philippines (Verdoorn 1934).

Mastigolejeunea indica Steph. - **QLD.**: *PS 9961/Q*, 115 m ct.; *PS 9971/D*, 1-30 m ct., ru.; *PS 99106/A*. 25 m ct.; *P 01091/W* 1520-1560 m ra. -**NT.**: *P 01035/E* 10 m ct.; *P 01038/A* 110-130 m ct.; *P 01044/F, G* 65-75 m ct. Pa.; *P 01048/J* 30-35 m li.; *P 01049/C* 30 m ct.; *P 01050/C* 10-20 m ct.

It has a very scattered distribution in Indomalaysia (Mizutani 1986).

Mastigolejeunea ligulata (Lehm. & Lindenb.) Schiffn. - **QLD.**: *PS 9971/A*, 1-30 m ct.; - ***NT.**: *P 01039/A* 60 m ct.; *P 01048/B* 30-35 m li.

Widespread in the Indo-Pacific region.

Mastigolejeunea virens (Angstr.) Steph. - **QLD.**: PS 9970/M. 40 m ct.; PS 9979/AA. 340 m ct.; PS 9997/AB. 240-310 m li.

Widespread in the Indo-Pacific region.

Mastigolejeunea calcarata (Steph.) Verd. - **QLD.**: PS 9977/A. W. 885 m ct.; PS 9979/A. 340 m ra. -**NSW.**: PB 0015/G. 1300 m ct.; PB 0028/B. 250 m li.; PB 0031/B. 330-510 m ct.; PB 0034/G. 650-800 m ct.

M. calcarata is rather common in the tropical and subtropical rain forests of Queensland. Outside Australia, the species is apparently known only from its type collection from Fiji.

Mastigolejeunea undulata Gradst. & Grolle - **QLD.**: P 01119/E. 765-825 m ru.

M. undulata is known thus far only from eastern Malesia: Philippines, Moluccas, New Guinea (Mizutani 1986). In Australia it is known only from Queensland (North Coast Region).

Schiffneriolejeunea tumida (Nees & Mont) Gradst. var. *haskarliana* (Gottsche) Gradst. & Terken - **QLD.**: PS 9961/N. 115 m ct.; PS 9962/B. 65 m ct.; PS 9977/B. 885 m ct.; PS 9980/B. 2-3 m ct.

Widespread in the Indo-Pacific region.

Spruceanthus thozetianus (Gottsche & F. v. Müll) B. Thiers & Gradst. - **QLD.**: PS 99130/Q. 690 m ct.; P 01107/M. 300-480 m rd.

At present *S. thozetianus* is known only from Australia.

Stictolejeunea balfourii (Mitt.) E. W. Jones. var. *balfourii* - **QLD.**: PS 9983/AS. 85 m ph.; PS 99125/H. 28 m rd.

Pantropical (Gradstein 1985).

Thysananthus australis (Steph.) B. Thiers & Gradst. - ***QLD.**: PS 9997/AA. 240-310 m li. This is an Australian endemic known only from northern New South Wales (Thiers & Gradstein 1989).

Thysananthus retusus (Reinw., Blume & Nees) B. Thiers & Gradst. - **QLD.**: PS 9972/AQ. 850-

870 m ra.; PS 9983/O. 85 m ct.; PS 9989/A. 5m ct.; PS 9991/A. 20 m li.; P 01080/E 920-1050 m ct.; P 01102/F 800 m ct.

Thysananthus retusus is rather commonly encountered in the rain forests of northern Queensland. Outside Australia it is known throughout the Indo-Pacific region.

Thysananthus spathulistipus (Reinw., Blume & Nees) Lindenb. - **QLD.**: PS 9973/E, F. 940 m ct.; PS 9976/V. 900 m ct.; PS 9978/D. 860 m ct.; PS 9983/L. 85 m ct.; PS 9987/L. 140 m ra.; PS 9997/B. 240-310 m ct.; S 9998/K. 270 m ct.; PS 99105/K. 85 m ct.; PS 99111/N. 1200-1240 m ra.; P 01101/L 680-700 m ra.; P 01102/E, K 800 m ct., ra.; P 01121/Q. 840-870 m ct.

A pantropical species widely distributed in Africa, Southeast Asia and Oceania.

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9962 - Fraser Island (Great Sandy Nat. Park). E of Central Station. 26°29'S, 153°03.9'E. At 65 m alt. **Hab.:** *Araucaria cunninghamii* = „hoop pine“ plantation on gentle sandy slopes.

9966 - Clarke Range, Eungella Nat. Park 70 km W of Mackay. „Palm Grove“ at the E edge of the escarpment. 21°9'S, 148°80'E. At 770 m alt. **Hab.:** Shady, relatively wet submontane rain forest, rich in palms.

9968 - Clarke Range, 70 km W of Mackay, at the corner of Dalrymple and Black Roads, 4 km ENE of Eungella. 21°6'S, 148°31'E. At 910 m alt. **Hab.:** Pastureland with sole *Alphitonia* & *Acacia* trees, near forest.

9970 - Cedar Creek Falls 14 km E of Proserpine town, near the coast. 20°24.5'S, 148°47.2'E. At 40 m alt. **Hab.:** Dense *Tristanopsis-Casuarina-Melaleuca* woodland with grass trees (*Xanthorrhoea*) in undergrowth. Half shady cliffs and boulders rich in bryophytes, with *Boea hygroskopica* (Gesneriac.)

9971 - Wilson Beach 17 km SE of Proserpine town. 20°28.3'S, 148°43.8'E. At 1-30 m alt. **Hab.:** Dense coastal bush with *Heritiera litoralis*, *Hibiscus tiliaceus* and *Pandanus*. Large boulders on ground.

Appendix 1. Locality numbers of T. Pócs used by the collectors in Australia between 1999 and 2001.

Trip made by T. Pócs and H. Streimann, guided by A. Cairns, on the 21 August.

Yr 1999 -

QUEENSLAND

Trip made by T. Pócs and H. Streimann, between 17 and 20 August.

9972 - Paluma Range State Forest. at Birthday Creek (James Cook University Experimental Plot). 18°59.9'S, 146°11'E. At 850-870 m alt. **Hab.:** Montane rainforest („complex nothophyll vine forest“) along streamlet.

9961 - Fraser Island (Great Sandy Nat. Park), along the Central Station – Eurong Road. 25°30'S, 153°5.5'E. At 115 m alt. **Hab.:** Disturbed, tall *Eucalyptus* – *Syncarpia hillii* forest with a few giant specimens of *Agathis robusta* = Kauri pine.

Trip made by T. Pócs and H. Streimann, guided by A. Cairns, accompanied by H. Walker, on 22 August.

9973 - Paluma Range, Mt. Spec State Forest, along Paluma – Hidden Valley Road, on hilltop. 19°01'S, 146°09'E. At 940 m alt. **Hab.:** . Open

heath forest of *Leptospermum* and *Syncarpia* (Myrtaceae).

9976 - Paluma Range. In the garden of A. & W, Cairns in Paluma village. 19°04'S, 146°12.5'E. At 900 m alt. **Hab.:** Opening of a submontane rain forest full of epiphytes.

Trip made by T. Pócs and H. Streimann, between 22 August and 8 September

9977 - Paluma Range. Mt. Spec State Forest, 34 km S of Ingham, at the edge of Paluma Dam. 18°57.3'S, 146°8.9'E. At 885 m alt. **Hab.:** Secondary *Acacia melanoxylon* stand at lake shore.

9978 - Paluma Range State Forest, along Paluma Road below the village. 19°5'S, 146°13'E. At 860 m alt. **Hab.:** Secondary *Leptospermum* woodland around an abandoned quarry.

9979 - Paluma Range. Little Crystal Creek along the Paluma (Mt. Spec) Road. 19°1'S, 146°16'E. At 340 m alt. **Hab.:** Dry, shady, sclerophyll, *Araucaria cunninghamii* dominated forest surrounded by open *Eucalyptus* woodland with *Cycas*.

9980 - Cardwell Beach. 18°18'S, 146°18'E. At 2-3 m alt. **Hab.:** *Terminalia*, *Calophyllum* and *Dillenia* trees in groups.

9983 - „The Boulders“ rainforest reserve along Babinda Creek, 5 km W of Babinda town. 17°20.5'S, 145°52.2'E. At 85 m alt. **Hab.:** Tropical lowland rainforest rich in epiphytes, interwoven by rattan (*Calamus*) palm.

9985 - NE side of Babinda town. 17°20'S, 145°55.7'E. At 70 m alt. **Hab.:** Planted roadside *Delonix* (*Poinciana*) *regia* trees.

9986 - Main Coast range, Daintree River Nat. Park, Mossmann Gorge area 4-5 km W of Mossman town. 16°28'S, 145°19.5'E. At 110-160 m alt. **Hab.:** Tropical lowland rainforest with many buttressed trees.

9987 - Main Coast range, Daintree River Nat. Park, Mossmann Gorge area 4-5 km W of Mossman town. Rex Creek. 16°28'S, 145°19.4'E. At 140 m alt. **Hab.:** Open, rocky mesic evergreen forest along stream.

9988 - Newell Beach near Mossmann. 16°25'S, 145°24'E. At 2-3 m alt. **Hab.:** Scattered, partly native, partly planted trees.

9989 - Daintree National Park, Cape Tribulation. „Botanical Circuit“ along Noah Creek. 16°8.8'S, 145°26.6'E. At 5 m alt. **Hab.:** Temporarily waterlogged lowland rainforest, rich in *Licuala* palms, in propped and in cauliflorous trees.

9990 - Daintree National Park, Cape Tribulation. „Botanical Circuit“ along Noah Creek, 38 km NNE of Mossman. 16°8.8'S, 145°26.7'E. At 1-2 m alt. **Hab.:** Mangrove forest with *Rhizophora* and with *Cheilocarpus* (Meliaceae), rich in epiphytes.

9991 - Daintree National Park, Cape Tribulation. Thompson Creek above the Daintree – Bloomfield River Road. „Australian Rainforest Crane Facilities“ area. 16°6'S, 145°26.8'E. At 20 m alt. **Hab.:** Seasonal lowland rainforest effected by cyclon in January 1999.

9995 - Mitchell River Watershed along the Mt. Malloy Road, 9 km SW of Mossman. 16°33'S, 145°23'E. At 450 m alt. **Hab.:** Regrowth of mesic forest and plantation (*Acacia*).

9996 - N spurs of Mt. Finlayson Range near Staty Creek, 32 km SSE of Cooktown, near Home Rule Lodge. 15°45.3'S, 145°17'E. At 230 m alt. **Hab.:** Clearings in mesic forest with scattered trees.

9997 - N spurs of Mt. Finlayson Range. Home Rule Falls along Staty Creek, 32 km SSE of Cooktown. 15°44.3'S, 145°18.8'E. At 240-310 m alt. **Hab.:** Tropical forest dominated by *Tristanopsis* beside permanent creek in gorge.

9998 - N spurs of Mt. Finlayson Range. Mulligan Creek near the Rossville – Mt. Leswell Road, 32 km SSE of Cooktown. 15°46'S, 145°16.5'E.

At 270 m alt. **Hab.:** Mesic forest with many palms and *Pandanus*.

99100 - N spurs of Mt. Finlayson Range, along the Rossville – Home Rule Lodge track, 33 km SSE of Cooktown. 15°45'S, 145°16'E. At 240 m alt. **Hab.:** Disturbed mesic lowland forest near a small stream.

99101 - W from Mt. Finlayson Range. NW side of Mt. Misery, along the Shipton Flat track, 43 km SSE of Cooktown. 15°51.6'S, 145°12.3'E. At 570-620 m alt. **Hab.:** Dry sclerophyll forest on steep slope with granite boulders.

99103 - Cape Tribulation area, Gap Creek. 35 km S of Cooktown, 5 km S along the Rossville – Bloomfield River Road. 15°47'S, 145°17.5'E. At 240 m alt. **Hab.:** Lowland rainforest beside a small stream.

99105 - Cape Tribulation area, Gap Creek. 40 km S of Cooktown, 10 km S along the Rossville – Bloomfield River Road. 15.49°S, 145°20'E. At 85 m alt. **Hab.:** Poor secondary lowland rainforest along streamlet.

99106 - Near the bridge of Rossville – Cape Tribulation road over Gap Creek, tributary of Bloomfield River. 15°57.5'S, 145°19'E. At 25 m alt. **Hab.:** Dry semideciduous woodland at sandy riverside.

99107 - Daintree River ferry, 22 km NNE of Mossman. 16°15.5'S, 145°24'E. At 1-3 m alt. **Hab.:** Tall mangrove forest.

99109 - Atherton Tableland. Hugh Nelson Range. Summit around the telecommunication tower, 22 km S of Atherton 17°27'S, 145°29'E. At 1240 m alt. **Hab.:** Somewhat disturbed montane rainforest dominated by large *Acacia* and *Alphitonia*.

99111 - Atherton Tableland. Main Coast Range. Mt. Lewis. Summit along the forest road, 56 km NNE of Mareeba. 16°31'S, 145°16'E. At 1200-1240 m alt. **Hab.:** Montane rain forest on gentle slope, with small boulders.

99114 - Atherton Tableland. Cardwell Range. On E slope of Mt. Fisher (extinct volcano), 9 km NE of Ravenshoe. 17°32-32.5'S, 145°34.3-7'E. At 940 – 1000m alt. **Hab.:** Disturbed submontane rainforest.

99117 - E edge of Atherton Tableland. Wooroonooran Nat. Park, Henrietta Creek, 33 km WSW of Innisfail, along the Palmerston Highway. 17°37'S, 145°45'E. At 375 m alt. **Hab.:** Lowland rainforest with scattered *Agathis robusta*.

99125 - Broadwater State Forest Park 34 km NW of Ingham. 18°25.4'S, 145°56.6'E. At 28 m alt. **Hab.:** Here and there waterlogged lowland rain forest with many palms and with giant, buttressed *Ficus albipila* & *F. superba*.

99126 - Broadwater State Forest Park 27 km NW of Ingham, at Canoe Creek. 18°27'S, 146°00'E. At 30 m alt. **Hab.:** Mesic riparian forest.

99130 - Clarke Range, Cathu State Forest, 46 km SSW of Proserpine (NW of Yalboro). Clarke Range Lookout. 20°49.3'S, 148°31.8'E. At 690 m alt. **Hab.:** Grazed dry sclerophyll *Eucalyptus* + other Myrtaceae woodland.

99137 - Coomingle State Forest, Hurdle Gully Scientific Area 10 km WSW of Monto. 24°54'S, 151°1'E. At 300 m alt. **Hab.:** Microphyllous, dry scrub forest with *Brachychiton*.

Yr 2000 -

Trip made by T. Pócs, S. Pócs, E. A. Brown and by R.C. Coveny, between 15 and 24 February.

NEW SOUTH WALES

009 - Dorrigo National Park E of Dorrigo town. Along Rosewood Creek track. 30°22'S, 152°47.8'E. At 600-730 m alt. **Hab.:** Subtropical lowland rain forest with many vines, *Cyathea*, epiphytes (*Asplenium nidus*, *Platyserium*), including epiphylls.

- 0013** - Guy Fawkes River National Park, between Chaelundi Camping Area and Chaelundi Falls. 30°03.0'S, 152°20'E. At 910 m alt. **Hab.:** Dry sclerophyll *Eucalyptus* forest with a wetter aspect along Chaelundi Creek and above the falls, with boulders.
- 0015** - Mount Hyland Nature Reserve. 30°08.2'S, 152°25.3'E. At 1300 m alt. **Hab.:** Dense, very shady, dry microphyllous forest.
- 0021** - Iluka Nature Reserve 2 km NE of Iluka, on the peninsula. 29°23.9'S, 153°22.3'E. **Hab.:** Dry, closed coastal dune forest and bushes at 1-2 m alt.
- 0023** - The „Big Scrub“. Victoria Park Nature Reserve 18 km E of Lismore. 28°54.1'S, 153°24.6'E. At 120 m alt., 15 km from the coast. **Hab.:** Lowland type subtropical rain forest dominated at places by the palm *Acanthophoenix cunninghamii*.
- 0025** - Nightcap National Park, S foot of Mt. Matheson, along the track to lower Minyon Fall, 20 km WNW of Mullumbimby. 28°37.1'S, 153°23.9'E, at 250 m alt. **Hab.:** Dry and mesic sclerophyll forest.
- 0027** - Nightcap National Park, at the head of Minyon Falls, 28°36.9'S, 153°23.9'E, at 300 m alt. **Hab.:** 6-8 m tall bush formed by *Leptospermum petersonii*.
- 0028** - Whin Whian State Forest, „Rocky Creek“, near the causeway of Rummery Road, at 250 m alt. **Hab.:** Riverine forest and *Leptospermum petersonii* bush on rocky streamside. 28°36.55'S, 153°21.1'E.
- 0029** - At Donaghy's Bridge on Wilsons Creek, along the Mullumbimby – Goonengerry road SE from the Nightcap National Park. 28°35.5'S, 153°27'E, at 110 m alt. **Hab.:** Secondary forest.
- 0030** - Nightcap National Park, Tuntable Creek, below Tuntable Falls. 28°35.5'S, 153°27'E **Hab.:** Subtropical rain forest with many *Acanthophoenix cunninghamii* palms in the valley, at 250-350 m alt.
- 0031** - Nightcap National Park, Ridge leading from Nadi Summit along the E side of Tuntable Creek. 28°35.5'S, 153°35'E. 330-510 m alt. **Hab.:** Mesic sclerophyll *Eucalyptus* forest alternating with *Casuarina* – *Xanthorrhoea* stands at rocky places.
- 0032** - Mt. Warning National Park, Corrumbyn Creek below the Picnic Area. 28°23.6'S, 153°35'E. **Hab.:** Streamside vegetation and degraded subtropical rain forest just outside the park area, at 200 m alt.
- 0034** - Mt. Warning National Park, E slope below summit, 650-800 m alt. 28°23.90'S, 153°17.14'E. **Hab.:** Warm temperate rain forest.
- 0035** - Border Ranges National Park, at the park entrance, on ridge. 28°29.9'S, 153°07.1'E. **Hab.:** Mesic sclerophyll forest at 450 m alt.
- 0036** - Border Ranges National Park, Bar Mountain, at the Picnic Area on the W edge of caldera rim. 28°27.5'S, 153°07.8'E, at 900 m alt. **Hab.:** Temperate rain forest with *Nothofagus cunninghamii*.
- 0037** - Border Ranges National Park, Blackbutt Lookout at the inner side of W caldera rim at 850 m. 28°26.3'S, 153°08.5'E. **Hab.:** Contact of dry xerophyll *Eucalyptus* forest and of temperate rain forest with *Nothofagus cunninghamii* and epiphylls.
- 0038** - Border Ranges National Park, Pinnacle Lookout at the inner side of W caldera rim at 800 m alt. 28°24.2'S, 153°07.4'E. **Hab.:** Contact of cool temperate rain forest with *Nothofagus cunninghamii* and of open *Acacia* – *Xanthorrhoea* bush with 2-3 m tall *Xanthorrhoea* trees.
- 0039** - Border Ranges National Park, Brindle Creek, along Helmholtzia Loop. 750 m alt. 28°22.7'S, 153°04.1'E. **Hab.:** Wet subtropical rain forest.
- 0040** - Border Ranges National Park, Antarctic beech Picnic Area 28°22.4'S, 153°05.8'E. **Hab.:**

Nothofagus cunninghamii stand (trees up to 30 m height) with many *Acacia melanoxylon* in the open area at 1050 m alt.

0041 - Brunswick Head Nature reserve N of Ballina town. 28°31.9'S, 153°31.65'E. At 2 m alt. **Hab.:** Coastal *Casuarina glauca* dominated forest.

0046 - Bellangri State Forest, 45 km WSW from Kempsey, between No1 Lookout and the junction leading to Wilson River Reserve. 31°17.3'S, 152°32'E, at 610 m. **Hab.:** Secondary, warm temperate rain forest.

0048 - Gloucester Tops National Park, eastern edge, 35 km SW from Gloucester. 32°03.75'S, 151°41.4'E, at 350 m altitude. **Hab.:** Subtropical riverine forest along the Gloucester River.

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NORTHERN TERRITORY

Trip made by T. Pócs and S. Pócs, between 16 and 25 May.

01035 - Coastal Plain. Fogg Dam Conservation Reserve, 52 km ESE of Darwin. 12°30'S, 131°17'E. At 10 m alt. **Hab.:** Complex of waterlogged *Melaleuca* swamp forest with *Sterculia holtzei*, monsoon forest with *Strychnos lucida*, *Syzygium suborbiculare* and *Maranthes corymbosa* (Chrysobalanaceae).

01037 - Litchfield National Park. Tabletop Range. „Buley Rockholes“ in the valley of Florence Stream. 13°S, 130°48'E. At 140-150 m alt. **Hab.:** Rocky streambed accompanied by riverine monsoon forests, rich in palms.

01038 - Litchfield National Park. Tabletop Range. Above Florence Falls and below, around „Plunge Pool“ in Florence Stream valley. 13°06'S, 130°47'E. At 110-130 m alt. **Hab.:** Very shady, tall riverine and monsoon forest with closed canopy of *Hydriastele wendlandiana* palm.

01039 - Litchfield National Park. 14 km WSW from Batchelor, along Finnis River. 13°01.5'S, 130°57,1'E. At 60 m alt. **Hab.:** Riparian forest.

01042 - Litchfield National Park. „Curtain Cascades“ near the W edge of national park. 13°07.3'S, 130°40.1'E. At 50 m alt. **Hab.:** Streamside monsoon forest with many palms, with dry rock outcrops.

01043 - Litchfield National Park. Wangi Falls at the W edge of the national park. 13°09.9'S, 130°41.1'E. At 20-90 m alt. **Hab.:** Gallery forest dominated by *Pandanus aquaticus* and by *Melaleuca viridiflora* below the falls; monsoon forest with many palms on the slope with transitions to the dry woodland at the upper, rocky edge.

01044 - Litchfield National Park. Greenant Creek. 13°12'S, 130°42'E. At 65-75 m alt. **Hab.:** Gallery forest along streamlet with many palms, surrounded by dense, mesic monsoon forest.

01048 - Coastal Plain. Berry Springs Nature Park. 12°42.1'S, 131°00'E. At 30-35 m alt. **Hab.:** Complex of dry *Cochlospermum-Eucalyptus-Calythrix-Cycas* woodland and monsoon vine forest („rainforest“) with *Nauclea orientalis*, *Alstonia actinophylla* and *Eucalyptus papuana*, at the wetter places with *Carpentaria acuminata* palm.

01049 - Coastal Plain. Berry Springs Wildlife Park. 12°42.1'S, 131°02'E. At 30 m alt. **Hab.:** Mosaic of dry woodland, dry forest and of riverian monsoon forest.

01050 - Coastal Plain. Howard Springs Nature Park, 25 km ESE of Darwin. 12°27.8'S, 131°04'E. At 10-20 m alt. **Hab.:** Riverine monsoon forest.

01052 - Coastal Plain. Holmes Jungle Nature Park at the NE side of Darwin township area, near to the Airport, 12°24.03'S, 130°55.7'E. At 40 m alt. **Hab.:** Complex of riverine monsoon forest and of dry woodland.

NORTHERN QUEENSLAND

Trip made by T. Pócs, S. Pócs, E.A. Brown and Ch. Cargill organized and guided by A. Cairns between 9 and 20 June.

01078 - Atherton Tableland. Atherton town. „Woodlands Tourist Park“. 17°16.9'S, 145°28.04'E. 720 m. **Hab.:** Garden of the camping and caravan park.

01079 - Hugh Nelson Range, Long-lands Gap State Forest. 17°27.15'S, 145°28.9'E. At 234m alt. **Hab.:** Degraded montane rainforest.

01080 - Hugh Nelson Range. The Crater National Park., Mt. Hypipamee. Barron River valley. 17°26'S, 145°29'E. At 920-1050 m alt. **Hab.:** Montane rainforest.

01081 - Atherton Tableland. W of Upper Barron village. 17°17'23.9S, 145°29.2'E. At 845 m alt. **Hab.:** Roadside trees.

01083 - Atherton Tableland. Beantree Bridge, Mazlin creek NE of Atherton. 17°14.03'S, 145°30'E. At 720 m alt. **Hab.:** Degraded bush along creek.

01084 - Main Coast Range. Mt. Lewis W of Rumula. WSW slope of the summit, along „Mount Lewis Road“. 16°35.3'S, 145°16.2'E. At 950 m alt. **Hab.:** Montane rain forest along creek.

01090 - East Coast, E of Bellenden Ker Range. Mangroves adjacent to Russell River Landing, Russell River National Park. 17°16.6'S, 145°56.8'E. At sea level. **Hab.:** Tall mangrove forest full of epiphytes (high rainfall area).

01091 - Bellenden Ker Range and National Park. Summit ridge W of Centre Peak. 17°16.8'S, 145°51.2'E. At 1520-1560 m alt. **Hab.:** Elfin forest, rich in epiphytes.

01092 - Bellenden Ker Range and National Park. NW ridge of the Centre Peak. 17°15.7'S, 145°51.15'E. At 1420-1520 m alt. **Hab.:** Elfin forest – montane forest transition.

01093 - Bellenden Ker Range and National Park. NW ridge of the Centre Peak. 17°15.06'S, 145°51.1'E. At 1370-1420 m alt. **Hab.:** Montane rainforest with relatively open canopy, dominated by the endemic kauri pine (*Agathis atropurpurea*).

01095 - Coastal Plain. Miriwinni Petrol Station. 17°24.1'S, 145°73.5'E. At 10 m alt. **Hab.:** Planted *Bixa orellana* trees along roadside.

01098 - Cardwell Range. Kirrama State Forest. SE slopes above Kennedy. 18°11.7'S, 145°52.1'E. 185 m. **Hab.:** Relatively dry lowland rainforest.

01099 - Cardwell Range. Kirrama State Forest. At two small waterfalls on the SE slopes, above Kennedy. 18°11.9'S, 145°50.6'E. At 365 m alt. **Hab.:** Wet cliffs, surrounded by relatively dry lowland rainforest.

01100 - Cardwell Range. Kirrama State Forest. SE slopes above Kennedy. Tucker lookout. 18°12.5'S, 145°50.2'E. At 465 m alt. **Hab.:** Dry, very rocky *Allocasuarina* forest.

01101 - Cardwell Range. Kirrama State Forest along Dougla (Carren) Creek, at the N side of Mt. Pershouse. 18°12.7'S, 145°48.5'E. At 680-700 m alt. **Hab.:** Relatively open montane rainforest.

01102 - Cardwell Range. Kirrama State Forest, on the summit ridge of Mt. Pershouse. 18°13.4'S, 145°48.3'E. At 800 m alt. **Hab.:** Very wet montane rainforest.

01104 - Cardwell town, along Bruce Highway, near the Shell Petrol Station. 18°16.36'S, 146°01.5'E. At 5 m alt. **Hab.:** Garden trees. **Substrate:** Corticolous on planted palms.

01106 - Lumholtz National Park. Above Wallaman Falls. 18°35.3'S, 145°48.3'E. At 540 m alt. **Hab.:** Open *Eucalyptus* - *Alstonia* woodland with *Xanthorrhoea* undergrowth.

01107 - Lumholtz National Park. In the gorge below Wallaman Falls. 18°35.3'S, 145°48.2'E. At 300-480 m alt. **Hab.:** Half shady, rocky evergreen forest.

01108 - Lumholtz National Park. At the bottom of the gorge below Wallaman Falls. 18°35.3'S, 145°48.3'E. At 260-300 m alt. **Hab.:** Shady, wet riverine rainforest and scree just below the falls in the spray zone.

01109 - Paluma Range. McClelland's Lookout at the edge of the plateau, E side of the village. 19°00'S, 146°12.8'E. At 900 m alt. **Hab.:** Montane rainforest opening.

01116 - Paluma Range State Forest. Benham's track near Hermit Creek crossing, above Bentham's Falls. 18°55.8'S, 146°08.6'E. At 890 m alt. **Hab.:** Open, wet *Eucalyptus* and *Leptospermum* forest along Hermit Creek, on acidic ground.

01119 - Paluma Range. Birthday Creek Falls. 19°58.7'S, 146°09.5'E. At 765-825 m alt. **Hab.:** Irrigated boulders surrounded by montane rainforest.

01121 - Paluma Range State Forest. Birthday Creek, James Cook University experimental area.(same as No. 9972). 18°59.9'S, 146°10.7-8'E. At 840-870 m alt. **Hab.:** Streambed rocks and stream banks in montane rainforest.

