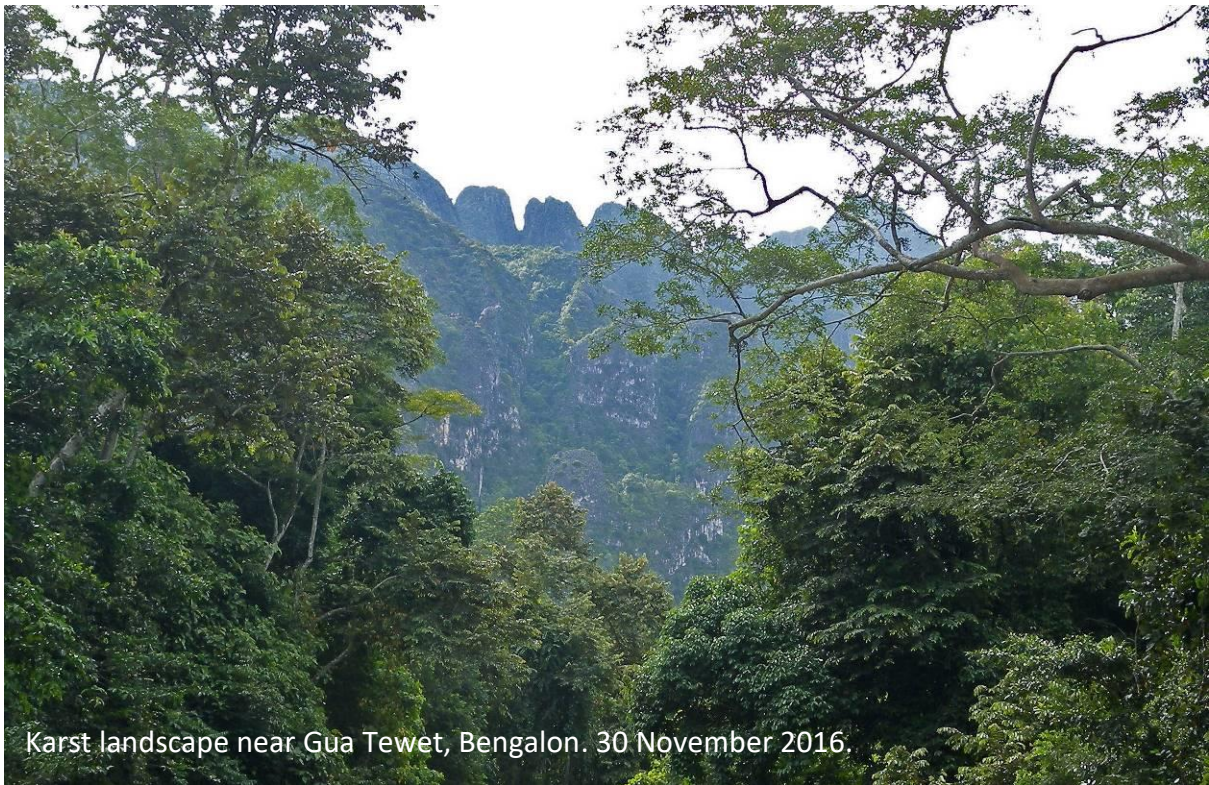


The flora of the Sangkulirang- Mangkalihat karst, Kalimantan, Indonesia

13 November to 7 December 2016

Report for the Davis Expedition Fund

By Mark Hughes

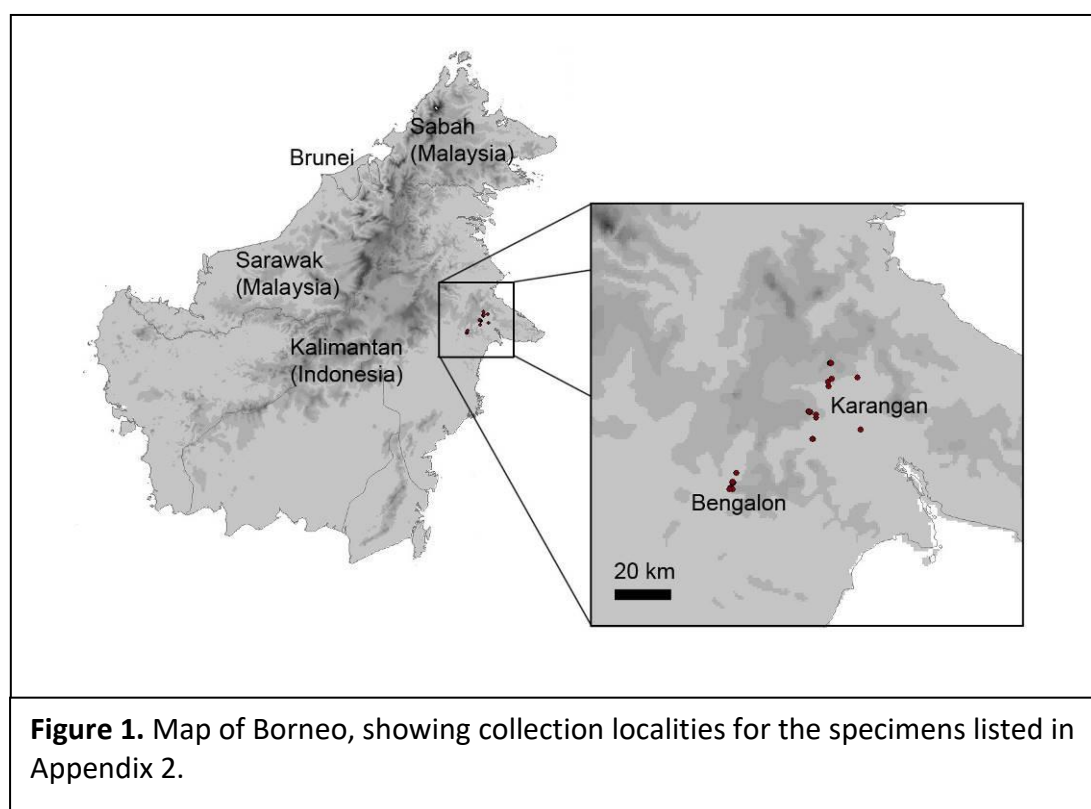


Karst landscape near Gua Tewet, Bengalon. 30 November 2016.

Introduction

Kalimantan is one of the most botanically under-collected areas of Southeast Asia and one which is under particular threat from logging, oil palm plantation and uncontrolled burning. Scattered areas of the province harbour isolated islands of karst limestone emerging from the lowlands, such as the ones which were the focus of this expedition, the Sangkulirang-Mangkalihat region (see highlighted region in Fig. 1). Limestone karst habitats harbour highly endemic and very diverse floras, and the isolation of the Sangkulirang-Mangkalihat karst system implied its flora will be particularly remarkable, and our collections from the 2016 expedition confirmed this.

We carried out a three-week expedition to make general botanical collections in the Sangkulirang-Mangkalihat limestone, with a focus on the species rich groups Begoniaceae, Gesneriaceae, Sapotaceae and Zingiberaceae. We collected herbarium material and living material, as seeds and cuttings (listed in Appendix 2). The collections will fill a gap in knowledge of the region and of these plant groups, and we have identified 7 species new to science from our preliminary analysis of the material. The collections will be used in ongoing taxonomic and biogeographic research projects, focussing on the evolution of endemism in limestone habitats.



Participants

- Mark Hughes, RBGE, Tropical Botanist (Begonia systematics)
- Helen Yeats, RBGE, Horticulturalist (Zingiberaceae cultivation)
- Deden Girmansyah, Herbarium Bogoriense, Tropical Botanist (Begonia systematics)
- Marlina Ardiyani, Herbarium Bogoriense, Tropical Botanist (Zingiberaceae systematics)

Itinerary

13 November	MH &HY Arrive in Jakarta, drive to Bogor to be near the botanic garden and herbarium
14 November	Meet counterparts Deden Girmansyah and Marlina Ardiyana in the herbarium at Cibinong to finalise logistics and to double check paperwork and permits.
15 November	By bus to Jakarta airport, fly to Balikpapan on Borneo, find accommodation and arrange car and driver for next leg of the expedition
16 November	Pick up supplies (collecting pole, tarpaulin, etc.), register with local police dept, meet counterpart from University who knows the Karangan area.
17-18 November	Drive to Karangan via Sangatta.
19-24 November	Collect in the Karangan region, staying in Karangan village as a base (localities listed in Appendix 2).
25-29 November	Drive to Hambar Batu, arrange boats and guides, head upriver to Gua Tewet and set up camp. Collect in the Bengalon vicinity, staying in camp for 5 nights.
30 November	Return downriver to Batu Hambar, pick up car and driver and return to Samarinda.
1 December	Process export permit, drive to Balikpapan and take flight to Jakarta. Drive to Bogor.
2-6 December	Hand over living material to Bogor Botanic Garden, and prepare the specimens for drying in the herbarium in Cibinong. Visit the immigration office for exit papers.
7 December	Return flights to Edinburgh (HY) and Taipei (MH).

Methods

Herbarium material was collected in newspaper and loosely pressed at the end of each collecting day. Each collection duplicate was labelled using the number series "EKBOE"; representing East Kalimantan Bogor and Edinburgh. Each day's bundle of specimens was placed into a separate polythene sack, and dampened with 80% alcohol to prevent mould growth and to keep the specimens in good condition until they could be dried. Seeds and spores were placed into seed packets and kept at ambient humidity. Silica dried samples

were placed in perforated paper packets and kept in a screw-topped container of silica gel crystals. Living material was trimmed as appropriate for the type of material, and wrapped in damp newspaper and stacked in a cool-box. Daily inspections were carried out to check for mould growth and water requirements.

Outputs

- 51 living collections of *Begonia*, gingers, gesners and ferns, most new to cultivation
- 120 herbarium collections (in triplicate)
- 7 species new to science
- Reports and papers highlighting the conservation value of the karst in East Kalimantan





Figure 3. Four of the new species of *Begonia* collected, with sufficient flowering material to make type specimens and permit description.



Figure 4. Clockwise from top left: Collecting along the river near Gua Tewet; dissection of *Etlingera brevilabrum*; a species of *Neonauclea* characteristic of the riverside vegetation; a *Clematis* species; processing specimens in Karang; the karst landscape of Karang.

Appendix 1: Budget

Income		Outgoings	
Sibbald Trust	£2,000	Subsistence & accom ¹	£2,407
Davis Fund	£3,000	Boat and skipper hire	£577
RHS	£1,000	Flights (international & regional) ²	£2,227
RBGE	£3,000	Guide and counterpart fees	£1,199
Total	£9,000	Permits	£125
		Supplies & equipment ³	£793
		Road transport ⁴	£1,644
		Total	£8,972

1. 113 person-days at an average of £21:30 pppd
2. Flights Edinburgh-Singapore-Jakarta rtn x 1; Edinburgh-Singapore-Jakarta-Taipei-Edinburgh x 1; Jakarta to Balikpapan rtn x 4
3. Includes fuel, medical and courier costs
4. Includes 4WD and driver hire, plus taxi and bus fares

Appendix 2: Collections

Num	Date	Family	Genus	Species	Subdistrict	Location
EKBOE1	19-Nov-16	Zingiberaceae	Alpinia?	sp.	Karangan	Karst forest on edge of MPI plantation
EKBOE2	19-Nov-16	Zingiberaceae	Etlingera?	sp.	Karangan	Karst forest on edge of MPI plantation
EKBOE3	19-Nov-16	Begoniaceae	Begonia	sp.	Karangan	Karst forest on edge of MPI plantation
EKBOE4	19-Nov-16	Aspleniaceae	Asplenium	sp.	Karangan	Karst forest on edge of MPI plantation
EKBOE5	19-Nov-16	Polypodiaceae	Polypodium	sp.	Karangan	Karst forest on edge of MPI plantation
EKBOE6	19-Nov-16	Gesneriaceae	Cyrtandra	sp.	Karangan	Karst forest on edge of MPI plantation
EKBOE7	19-Nov-16	Zingiberaceae	Etlingera?	sp.	Karangan	Karst forest on edge of MPI plantation
EKBOE8	20-Nov-16	Begoniaceae	Begonia	sp.	Karangan	Gua Tapah Tangan
EKBOE9	20-Nov-16	Fern	unknown	sp.	Karangan	Gua Tapah Tangan
EKBOE10	20-Nov-16	Zingiberaceae	Burbidgea	sp.	Karangan	Gua Tapah Tangan
EKBOE11	20-Nov-16	Fern	unknown	sp.	Karangan	Gunung Madu
EKBOE12	20-Nov-16	Begoniaceae	Begonia	sp.	Karangan	Gunung Madu
EKBOE13	20-Nov-16	Fern	unknown	sp.	Karangan	Gunung Madu
EKBOE14	20-Nov-16	Zingiberaceae	Etlingera?	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE15	20-Nov-16	Zingiberaceae	Hornstedtia	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE16	20-Nov-16	Loganiaceae	Fagrya	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE17	20-Nov-16	Zingiberaceae	Etlingera?	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE18	20-Nov-16	Myrsinaceae	Ardisia	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE19	20-Nov-16	Zingiberaceae	Hornstedtia	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE20	20-Nov-16	Fabaceae	unknown	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE21	21-Nov-16	Rubiaceae	Porterandia	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE22	21-Nov-16	Zingiberaceae	Amomum	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE23	21-Nov-16	Zingiberaceae	unknown	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE24	21-Nov-16	Begoniaceae	Begonia	sect. Bracteibegonia	Karangan	Km 23, en route to Air Tujun
EKBOE25	21-Nov-16	Zingiberaceae	Hornstedtia	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE26	21-Nov-16	Meliaceae	unknown	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE27	21-Nov-16	Fern	unknown	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE28	21-Nov-16	Zingiberaceae	Plagiostachys	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE29	21-Nov-16	Rubiaceae	Nauclea	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE30	21-Nov-16	Proteaceae	unknown	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE31	21-Nov-16	Gesneriaceae	Cyrtandra	sp.	Karangan	Km 23, en route to Air Tujun
EKBOE32	21-Nov-16	Begoniaceae	Begonia	sect. Bracteibegonia	Karangan	At Air Tujun
EKBOE33	21-Nov-16	Gesneriaceae	Cyrtandra	sp.	Karangan	At Air Tujun
EKBOE34	21-Nov-16	Begoniaceae	Begonia	sect. Petermannia	Karangan	At Air Tujun
EKBOE35	21-Nov-16	Begoniaceae	Begonia	sect. Petermannia	Karangan	Batu Tamiang
EKBOE36	21-Nov-16	Fern	unknown	sp.	Karangan	Batu Tamiang
EKBOE37	21-Nov-16	Fern	unknown	sp.	Karangan	Batu Tamiang
EKBOE38	21-Nov-16	Fern	unknown	sp.	Karangan	Batu Tamiang
EKBOE39	21-Nov-16	Fern	unknown	sp.	Karangan	Batu Tamiang
EKBOE40	21-Nov-16	Zingiberaceae	unknown	sp.	Karangan	Batu Tamiang
EKBOE41	22-Nov-16	Araceae	Calocasia	sp.	Karangan	Km 8, road from Karangan to Gunung Madu
EKBOE42	22-Nov-16	Annonaceae	Uvaria	sp.	Karangan	Km 8, road from Karangan to Gunung Madu

EKBOE43	22-Nov-16	Zingiberaceae	Hornstedtia	sp.	Karangan	Km 8, road from Karangan to Gunung Madu
EKBOE44	22-Nov-16	Begoniaceae	Begonia	sect. Petermannia	Karangan	Km 8, road from Karangan to Gunung Madu
EKBOE45	22-Nov-16	Gesneriaceae	Cyrtandra	unknown	Karangan	Km 8, road from Karangan to Gunung Madu
EKBOE46	22-Nov-16	Begoniaceae	Begonia	sect. Petermannia	Karangan	Karst block, Karangan region
EKBOE47	22-Nov-16	Ask Marlina	Zingiber	sp.	Karangan	Karst block, Karangan region
EKBOE48	22-Nov-16	Malvaceae	unknown	unknown	Karangan	Karst block, Karangan region
EKBOE49	22-Nov-16	Begoniaceae	Begonia	sect. Petermannia	Karangan	Isolated karst block, Karangan region
EKBOE50	23-Nov-16	Primulaceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE51	23-Nov-16	Melastomataceae	Pternandra	sp.	Karangan	Foothills of Gunung Beriu
EKBOE52	23-Nov-16	Zingiberaceae	Etingera	sp.	Karangan	Foothills of Gunung Beriu
EKBOE53	23-Nov-16	Rubiaceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE54	23-Nov-16	Zingiberaceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE55	23-Nov-16	Zingiberaceae	Alpinia	sp.	Karangan	Foothills of Gunung Beriu
EKBOE56	23-Nov-16	Myrtaceae	Rhodamnia	sp.	Karangan	Foothills of Gunung Beriu
EKBOE57	23-Nov-16	Melastomataceae	Pternandra	sp.	Karangan	Foothills of Gunung Beriu
EKBOE58	23-Nov-16	Annonaceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE59	23-Nov-16	Zingiberaceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE60	23-Nov-16	Tiliaceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE61	23-Nov-16	Lauraceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE62	23-Nov-16	Rubiaceae	Urophyllum	sp.	Karangan	Foothills of Gunung Beriu
EKBOE63	23-Nov-16	Rubiaceae	Lazianthus	sp.	Karangan	Foothills of Gunung Beriu
EKBOE64	23-Nov-16	Phyllanthaceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE65	23-Nov-16	Lamiaceae	Clerodendron	sp.	Karangan	Foothills of Gunung Beriu
EKBOE66	23-Nov-16	Rubiaceae	Urophyllum	sp.	Karangan	Foothills of Gunung Beriu
EKBOE67	23-Nov-16	Rubiaceae	Psychotria	sarmentosa	Karangan	Foothills of Gunung Beriu
EKBOE68	23-Nov-16	Annonaceae	unknown	sp.	Karangan	Foothills of Gunung Beriu
EKBOE69	23-Nov-16	Lycopodiaceae	Lygodium	sp.	Karangan	Foothills of Gunung Beriu
EKBOE70	24-Nov-16	Begoniaceae	Begonia	sect. Petermannia	Karangan	Pengadan karst, Gua Mardua
EKBOE71	24-Nov-16	Rubiaceae	Ixora	sp.	Karangan	Pengadan karst, Gua Mardua
EKBOE72	26-Nov-16	Zingiberaceae	Globba	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE73	26-Nov-16	Fern	Adiantum	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE74	26-Nov-16	Piperaceae	Piper	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE75	26-Nov-16	Euphorbiaceae	unknown	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE76	26-Nov-16	Acanthaceae	unknown	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE77	26-Nov-16	Fern	Pyrosia	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE78	26-Nov-16	Piperaceae	Peperomia	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE79	26-Nov-16	Vitaceae	Vittaria	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE80	26-Nov-16	Gesneriaceae	Cyrtandra	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE81	26-Nov-16	Zingiberaceae	Zingiber	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE82	26-Nov-16	Begoniaceae	Begonia	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE83	26-Nov-16	Meliaceae	Aglaia	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE84	26-Nov-16	Begoniaceae	Begonia	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE85	26-Nov-16	Urticaceae	Elatostemma	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE86	26-Nov-16	Gesneriaceae	Epithema	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE87	26-Nov-16	Gesneriaceae	Rhynchoglossum	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE88	26-Nov-16	Zingiberaceae	Elettariopsis	sp.	Bengalon	Trail from basecamp of Gua Tewet

EKBOE89	26-Nov-16	Zingiberaceae	Hornstedtia	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE90	26-Nov-16	Rubiaceae	Plectromia	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE91	26-Nov-16	Lauraceae	unknown	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE92	26-Nov-16	Annonaceae	Polyalthia	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE93	26-Nov-16	Gesneriaceae	Paraboea	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE94	26-Nov-16	Annonaceae	Uvaria	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE95	26-Nov-16	Lamiaceae	Callicarpa	longifolia	Bengalon	Trail from basecamp of Gua Tewet
EKBOE96	26-Nov-16	Ebenaceae	Diospyros	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE97	26-Nov-16	Rubiaceae	Neonauclea	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE98	26-Nov-16	Fern	Dryopteris	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE99	26-Nov-16	Fern	unknown	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE100	26-Nov-16	Fern	unknown	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE101	26-Nov-16	Fern	Asplenium	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE102	26-Nov-16	Fern	Adiantum	sp.	Bengalon	Trail from basecamp of Gua Tewet
EKBOE103	27-Nov-16	Annonaceae	Polyalthia	sp.	Bengalon	Riverside trail from basecamp
EKBOE104	27-Nov-16	Acanthaceae	Ruellia	sp.	Bengalon	Riverside trail from basecamp
EKBOE105	27-Nov-16	Acanthaceae	Staurogyne	sp.	Bengalon	Riverside trail from basecamp
EKBOE106	27-Nov-16	Fern	Lygodium	sp.	Bengalon	Riverside trail from basecamp
EKBOE107	27-Nov-16	Actinidiaceae	Saurauia	sp.	Bengalon	Riverside trail from basecamp
EKBOE108	27-Nov-16	Rutaceae	Micromelum	minutum	Bengalon	Riverside trail from basecamp
EKBOE109	27-Nov-16	Fern	Lygodium	sp.	Bengalon	Riverside trail from basecamp
EKBOE110	27-Nov-16	Euphorbiaceae	Macaranga	sp.	Bengalon	Riverside trail from basecamp
EKBOE111	27-Nov-16	Urticaceae	Pipturus	argenteus	Bengalon	Riverside trail from basecamp
EKBOE112	27-Nov-16	Myristicaceae	Myristica	sp.	Bengalon	Riverside trail from basecamp
EKBOE113	27-Nov-16	Urticaceae	Vilebrunia		Bengalon	Riverside trail from basecamp
EKBOE114	27-Nov-16	Zingiberaceae	Alpinia	sp.	Bengalon	Riverside trail from basecamp
EKBOE115	27-Nov-16	Begoniaceae	Begonia	sp.	Bengalon	Riverside trail from basecamp
EKBOE116	27-Nov-16	Meliaceae	Disoxylum	sp.	Bengalon	Riverside trail from basecamp
EKBOE117	27-Nov-16	Zingiberaceae	Elettariopsis	sp.	Bengalon	Riverside trail from basecamp
EKBOE118	27-Nov-16	Vitaceae	Ampelocissus	arachnoidea	Bengalon	Riverside trail from basecamp
EKBOE119	27-Nov-16	Myristicaceae	Knema	sp.	Bengalon	Riverside trail from basecamp
EKBOE120	27-Nov-16	Sapindaceae	Allopius	cobe	Bengalon	Riverside trail from basecamp
EKBOE121	27-Nov-16	Rubiaceae	Papeta	sp.	Bengalon	Riverside trail from basecamp
EKBOE122	27-Nov-16	Fern	unknown	sp.	Bengalon	Riverside trail from basecamp
EKBOE123	27-Nov-16	Fern	unknown	sp.	Bengalon	Riverside trail from basecamp
EKBOE124	27-Nov-16	Lauraceae	Litsea	sp.	Bengalon	Riverside trail from basecamp
EKBOE125	28-Nov-16	Ranunculaceae	Clematis	sp.	Bengalon	Upstream trail via boat.
EKBOE126	28-Nov-16	Zingiberaceae	Alpinia	mutica	Bengalon	Upstream trail via boat.
EKBOE127	28-Nov-16	Rubiaceae	Neonauclea	sp.	Bengalon	Upstream trail via boat.
EKBOE128	28-Nov-16	Sapindaceae	Lepisanthes	sp.	Bengalon	Upstream trail via boat.
EKBOE129	28-Nov-16	Myrtaceae	Syzygium	sp.	Bengalon	Upstream trail via boat.
EKBOE130	28-Nov-16	Phyllanthaceae	Bridelia	sp.	Bengalon	Upstream trail via boat.
EKBOE131	28-Nov-16	Anacardiaceae	Dracontomelon	dao	Bengalon	Upstream trail via boat.
EKBOE132	28-Nov-16	Moraceae	Poikilospermum	suaveolens	Bengalon	Upstream trail via boat.
EKBOE133	28-Nov-16	Lauraceae	Alseodaphne		Bengalon	Upstream trail via boat.
EKBOE134	28-Nov-16	Rubiaceae	Plectromia	sp.	Bengalon	Upstream trail via boat.

EKBOE135	28-Nov-16	Ebenaceae	Diospyros	sp.	Bengalon	Upstream trail via boat.
EKBOE136	28-Nov-16	Memecylaceae	Memecylon	paniculatum	Bengalon	Upstream trail via boat.
EKBOE137	28-Nov-16	Rubiaceae	Ixora	sp.	Bengalon	Upstream trail via boat.
EKBOE138	28-Nov-16	Begoniaceae	Begonia	sp.	Bengalon	Upstream trail via boat.
EKBOE139	28-Nov-16	Annonaceae	Polyalthia	sp.	Bengalon	Upstream trail via boat.
EKBOE140	28-Nov-16	Gesneriaceae	Chirita	sp.	Bengalon	Upstream trail via boat.
EKBOE141	29-Nov-16	Annonaceae	Polyalthia	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE142	29-Nov-16	Begoniaceae	Begonia	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE143	29-Nov-16	Anacardiaceae	Parisea	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE144	29-Nov-16	Fern	unknown	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE145	29-Nov-16	Rubiaceae	Nauclea	orientalis	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE146	29-Nov-16	Gesneriaceae	Paraboea	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE147	29-Nov-16	Phyllanthaceae	Sauropus	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE148	29-Nov-16	Fern	Drynaria	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE149	29-Nov-16	Vitaceae	Leea	indica	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE150	29-Nov-16	Annonaceae	Atrobotrys	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE151	29-Nov-16	Meliaceae	Disoxylum	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE152	29-Nov-16	Fabaceae	unknown	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE153	29-Nov-16	Annonaceae	Uvaria	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE154	29-Nov-16	Piperaceae	piper	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE155	29-Nov-16	Selaginellaceae	Sellaginella	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE156	29-Nov-16	Piperaceae	Piper	caninum	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE157	29-Nov-16	Acanthaceae	Staurogyne	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp
EKBOE158	29-Nov-16	Phyllanthaceae	Antidesma	sp.	Bengalon	Downstream trail via boat from Gua Tewel camp