

CHECKLIST OF PTERIDOPHYTE FLORA OF ENGGANO ISLAND

Wita Wardani¹ & Bayu Adjie²

¹Herbarium Bogoriense, Botany Division, Research Center for Biology – LIPI, Cibinong 16911

²Bali Botanical Garden – LIPI, Candikuning, Baturiti, Tabanan, Bali 82191

Wita Wardani & Bayu Adjie. 2017. Daftar Jenis-jenis Pteridofita dari Pulau Enggano. *Floribunda* 5(6): 209–219. — Daftar 61 jenis paku-pakuan dan kerabat paku dilaporkan untuk pertama kalinya. Seluruh jenis yang terdaftar merupakan jenis-jenis yang tersebar luas. Luas dan jarak Pulau Enggano dari Sumatra tidak memungkinkan timbulnya keunikan pada keanekaragaman paku-pakuan dan kerabatnya. Satu jenis dinilai sebagai jenis yang belum lama ternaturalisasi, yakni *Adiantum latifolium*. Epifit (litofit) menyusun 44% dari daftar ini. Hutan Lindung Koha Buwa-buwa merupakan area penting yang menjadi tempat hidup hampir 50% keanekaragaman paku-pakuan di pulau ini.

Kata kunci: Enggano, Keanekaragaman, Koha Buwa-buwa, Paku-pakuan.

Wita Wardani & Bayu Adjie. 2017. Checklist of Pteridophyte Flora of Enggano Island. *Floribunda* 5(6): 209–219. — List of 61 pteridophyte species from the Island of Enggano is presented for the first time. None of these are endemic, all are wide spread species. The size and distance of Enggano from its mainland is insufficient to develop distinctiveness in diversity of pteridophyte. One in the list is believed to be newly naturalized, i.e. *Adiantum latifolium*. Epiphyte (lithophyte) constitutes 44 % of the list. The protected forest Koha Buwa-buwa is the important area that shelter nearly 50% of total pteridphyte diversity in the island.

Keywords: Enggano, Diversity, Koha Buwa-buwa, Pteridophyte.

The island of Enggano is one of the outermost small island in Indonesia. It lies in the Indian Ocean at 5°17'–5°31' S and 102°05'–102°25' E on the south-western side of Sumatra. The island has land area of only 39,586.74 Ha with highest point 240 m asl, at distance about 100 km off the coast of Sumatra (Regen 2011). The climate is wet tropical with annual rainfall might reach 3800 mm and air humidity to 83–88% (Regen 2011; Ekorusyono & Yuwono 2012). Geologically, Enggano is part of the islands that arose at the time of formation of the great Sumatran barrier (Bukit Barisan). The formation event created deep trench which separate them to Sumatra mainland (Anwar et.al.1984). Hence, it is believed that these oceanic islands never became part of the mainland, which is also thought to have distinctive biological diversity.

There are six conservation area, one forest concession and some human settlements distributed to six administrative villages in the island (Maryanto 2015). Most of the settlement were established next to the sea shore at the north east part of the island. Only those who were working on vast agricultural land live further up to the hills. The island's highest point lies in the protected forest named Koha Buwa-buwa.

The most comprehensive botanical exploration to this island was the one carried by Wilhelm van Lutjeharms in 1936 in between his trip to Java

(Steenis-Kruseman 1950). There are publications related with his collection from Enggano (Lutjeharms & Oostroom 1938; Bremenkamp 1938) however none was published for fern and fern allies. It was said that he entrusted his fern collection to Dr. O. Posthumus, who was, at that time, being assigned as an expert at the Java Suiker Industry in Pasuruan (East Java) to 1939 before transferred to and resided in Bogor until his death in 1944 (Steenis-Kruseman 1950). His work on Enggano's specimen is proven from the label on the specimens stored at BO.

Our study is aimed to resume the postponed publication on pteridophyte flora in this island with additional record resulted from later exploration. We attempted to re-collect specimens of the 1936 trip through an exploration in 2015. Findings on the pteridophyte diversity is discussed.

MATERIAL & METHODS

We examined all specimens collected from Enggano that kept in BO. A botanical exploration was carried out in April-Mei 2015 that all dried material collected were stored in BO while living collections were brought to Cibodas Botanical Garden and Bali Botanical Garden. This collection then added to our examination. The resulted list is ordered alphabetically by family, genus and spe-

cies. Sequence used in ordering the families and genera were based on Wardani et al. (2012) as applied for arrangement of specimen in BO. Main reference for identification are Flora Malesiana revisions (Holttum 1959, 1959a, 1963, 1978, 1981, 1991), Holttum & Nooteboom (2012); Hovenkamp et al. 1998; Hovenkamp & Miyamoto 2012; Kramer 1971; Nooteboom 1998; Nooteboom et al. 2012), Fern Flora of Thailand, Laos and Cambodia (Lindsay & Middleton 2012 onward), treatment for *Hymenophyllaceae* (Ebihara et al. 2006) and Alderwerlt (1909, 1917) primarily for information on distribution. We used recent names of location in this writing replacing old names and spelling recorded from the label of Lutjeharms's.

RESULT AND DISCUSSION

We found 104 numbers of collection made by Lutjeharms stored in BO. While in the 2015 trip, we collected 95 numbers within two weeks journey. Collectively, there were 54 fern species and seven lycophyte. No endemics found in this tiny island. Instead, all of the species were those that has wide distributional range. Therefore, distinctiveness that was expected for biological diversity in this remote island was not proven for fern flora. Compare to the Mascarene (Hennequin et al. 2014), area of an island and its distance from the mainland considered to be the main determinant of endemism. Rodrigues island, with area 104 km² and distance to Madagascar 1370 km, contains only 21 species with one endemic. Its neighbouring island, Mauritius, has 1865 km² with distance to Madagascar 800 km, contains 187 species with 13 endemics. This implies that Enggano with smaller area of only 36 km² and shorter distance (100 km) to Sumatra could not be expected to possess comparable unique pteridophyte diversity.

Despite the widespread distribution, some species are fairly rare, i.e. only noticed in one to two spots in the island. Among these, *Adiantum latifolium*, a neotropics origin, believed to be newly naturalized in the island. The plant was collected at the boundary of an old forest which nearby land was recently open for cultivation. This species has not being known to grow elsewhere in the island.

This 61 species is composed of 44 % epiphyte (some lithophyte), and 56 % of terrestrial species with climber, scrambler and semi-aquatics included. Family with the highest number of species are *Pteridaceae* (10 species), *Davalliaceae* and *Hymenophyllaceae* (six species both). The two later families are all epiphyte (lithophyte). It seems

that the high air humidity and undisturbed forest allow less common epiphyte, especially filmy ferns, to exist in this island. Other more common epiphyte species, such as those of *Polypodiaceae* and *Aspleniaceae* were frequently found but low in number of species. Noted that Koha Buwa-buwa and its surrounding forest shelters almost 50% of fern diversity in the island.

Checklist are presented alphabetically in two groups: "Lycophyte" and "Ferns". Names and synonyms of the families is following Christenhusz et al. 2011.

LYCOPHYTE

LYCOPODIACEAE P. Beauv. ex Mirb., Hist. Nat. Veg. [Lam. & Mirbel] 4: 293 (1802).

Synonyms: *Phylloglossaceae* Kunze, Bot. Zeitung (Berlin) 1: 722 (1843), *Huperziaceae* Rothm, Rept. Spec. Nov, Regni Veg. 66: 236 (1962).

Lycopodiella Holub, Preslia. 36: 20, 22 (1964).

Lycopodiella cernua (L.) Pic. Serm., Webbia 23: 166 (1968).

Synonym: *Lycopodium cernuum* L., Sp. Pl. 2: 1103 (1753).

Specimens examined: along the road in the forest of Kahyapu-Kiyah *Lutjeharms* 5389; forest on a transformed land in Koho-Doepabi ± 250 m asl *Lutjeharms* 5016.

General distribution: widely distributed in the tropics.

Phlegmariurus (Herter) Holub, Preslia 36: 17 (1964).

Phlegmariurus carinatus (Desv. ex Poir.) Ching, Acta Bot. Yunn. 4: 120 (1982).

Synonyms: *Lycopodium carinatum* Desv. ex Poir., Encycl. Supl. 3: 555 (1814); *Huperzia carinata* (Desv. ex Poir.) Trevis., Atti Soc. Ital. Sci. Nat. 17: 247 (1874).

Specimen examined: on a tree trunk in a forest near Koha Buwa Buwa *Lutjeharms* 4411.

General distribution: Tropical and subtropical Asia and Oceania.

Phlegmariurus nummularifolius (Blume) Ching, Acta Bot. Yunnan. 4(2) : 125 (1982).

Synonyms: *Lycopodium nummularifolium* Blume, Enum. Pl. Javae 2: 263 (1828); *Huperzia nummularifolia* (Blume) Chambers, Jermy & Crabbe, Brit. Fern. Gaz. 10: 176 (1971).

Specimen examined: on a tree in Koha Buwa Buwa *Lutjeharms* 3874.

General distribution: Throughout Malesia eastward to Oceania.

Phlegmariurus phlegmaria (L.) T. Sen & U. Sen, Fern. Gaz. 11(6): 421 (1978).

Synonyms: *Lycopodium phlegmaria* L., Species Plantarum 2 (1753); *Huperzia phlegmaria* (L.) Rothm., Feddes Repert. 54: 62 (1944).

Specimens examined: epiphyte on a huge tree in a forest near Koha Buwa Buwa *Lutjeharms* 4757 & 4032.

General distribution: Paleotropical.

Phlegmariurus squarrosus (G. Forst.) A. Love & D. Love, Taxon 26: 324. 1977.

Synonyms: *Lycopodium squarrosus* G. Forst., Fl. Ins. Austr. 86 (1786); *Huperzia squarrosa* (G. Forst) Trevis., Atti Soc. Crittog. Ital. 17: 247 (1875).

Specimens examined: in the forest near to Boea-Boea (Koha Buwa Buwa) *Lutjeharms* 4508; on tree branches in the forest near to Boea-Boea (Koha Buwa Buwa) *Lutjeharms* 4449; Boboyo, Meok, in the old secondary forest *Wita Wardani* 840; in the forest of Koha Buwa Buwa *Wiherman-ta* 1248.

General distribution: Tropical Asia and Oceania.

SELAGINELLACEAE Willk., Anleit. Stud. Bot. 221 (1820).

Selaginella P. Beauv., Prodr. Aetheogam. 101 (1805).

Selaginella ciliaris (Retz.) Spring, Bull. Acad. Roy. Sci. Bruxelles 10(1): 231 (1843).

Synonyms: *Lycopodium ciliare* Retz., Observ. Bot. 5: 32 (1789); *Lycopodioides ciliaris* (Retz.) Kuntze, Revis. Gen. Pl. 2: 826 (1891).

Specimens examined: on a road edge near Kahyapu *Lutjeharms* 5107, 5258, 5340; at coconut plantation in Boboyo *Lutjeharms* 5036; in the forest near Koha Buwa-buwa *Lutjeharms* 4788, along Kionopa river at clearings *Lutjeharms* 4330; at paddy field behind Pasangrahan, Meok *Lutjeharms* 3817; in a marsh near Bak Blau, Meok *Marlina Ardiyani* 25.

General distribution: China southward to Australia, Nepal eastward to Indonesia, Philippine and New Guinea.

Selaginella plana (Desv. ex Poir.) Hieron, Nat. Pflanzenf. 1(4): 703 (1901).

Synonym: *Lycopodium planum* Desv. ex Poir., Encycl. Suppl. 3: 554 (1814).

Specimen examined: in the forest on the ground at ±100 m asl *Lutjeharms* 4334.

General distribution: India, most part of Malesia, commonly cultivated in tropical countries.

FERNS

ASPLENIACEAE Newman, Hist. Brit. Ferns 6 (1840).

Asplenium L., Sp. Pl. 2: 1078 (1753).

Asplenium nidus L., Sp. Pl. 2: 1079 (1753).

Epiphyte, often to very large size, under light shade.

Specimens examined: In the forest near Koha Buwa-buwa *Lutjeharms* 4767, 4768; in the forest behind Boboyo *Lutjeharms* 5020; in Pulau Dua *Lutjeharms* 5292; Malakoni, around a sea shore *Abdurrahman Kertonegoro* 3029.

General distribution: Throughout old world tropics.

Asplenium tenerum G. Forst., Fl. Ins. Austr. 80 (1786).

Epiphyte.

Specimens examined: On a young tree in Koha Buwa-buwa *Lutjeharms* 4038, 4047; Meok *Lutjeharms* 3607A; up stream of Kuala Besar, Inono *Wita Wardani* 854, 855, 860, 867; on a trunk in a stream bank Sungai Kahabi, Banjar *Wita Wardani* 890.

General distribution: Islands in Indian Ocean to Pacific Ocean, Southern China to Northern Australia.

Asplenium tenerum G. Forst var. ***pallidum*** (Blume) Veldk. & Wardani, Reinwardtia 14(2): 304 (2015).

Synonym: *Asplenium thunbergii* Kunze, Linnaea 10: 517 (1836).

Epiphyte.

Specimens examined: On a young tree in a small stream in Malakoni *Lutjeharms* 5103; in Koha Buwa-buwa *Lutjeharms* 4044; up stream of Kuala Besar, Inono, next to a plant of *A. tenerum* *Wita Wardani* 866.

General distribution: Southern Asia to Polynesia, throughout Malesia.

Asplenium polyodon G. Forst., Fl. Ins. Austr. 80 (1786).

Epiphyte on damp tree trunks.

Specimens examined: fairly common at the beach near Kioyoh *Lutjeharms 4679*, in Koha Buwa-buwa *Lutjeharms 4111*, in the forest behind Kaana *Lutjeharms 4995*, in the forest near Meok *Lutjeharms 3606A*, Meok at sea level *Wita Wardani: 801, 810, 814, 839*; Kuala Besar, Inono *Wita Wardani 853* and many other sites.

General distribution: Old world tropic.

ATHYRIACEAE Alston, Taxon 5: 25 (1956).

Diplazium Sw., J. Bot. (Schrader) 1800 (2): 61 (1801).

Diplazium esculentum (Retz.) Sw., J. Bot. (Schrader) 1801 (2): 312 (1803).

Terrestrial fern inhabit river or smaller stream bank, edible.

Specimens examined: Bendung, Banjar *Wita Wardani 882*; Kuala Besar, Inono *Wita Wardani 910*.

General distribution: Tropical Asia to southern Pacific, Central China and southern Japan.

BLECHNACEAE Newman, Hist. Brit. Ferns, ed. 2: 8 (1844).

Synonym: *Stenochlaenaceae* Ching, Acta Phytotax. Sin. 16: 18 (1978).

Stenochlaena J. Sm., J. Bot. (Hooker) 3: 401 (1841).

Stenochlaena palustris (Burm.f.) Bedd., Suppl. Ferns Brit. Ind. 26 (1876).

Scrambler, common by the roadside but hardly fertile, often between thicket of bushes.

Specimens examined: Koha Buwa Buwa *Lutjeharms 4060*; at the edge of the forest in Meok *Lutjeharms 3839*; by the road side Bendung, Banjar *Wita Wardani 881*.

General distribution: India, throughout SE Asia, northern Australia and eastward to Tonga and Samoa.

CYATHEACEAE Kaulf., Wesen Farrenkr. [119] (1827).

Synonym: *Alsophylaceae* C. Presl., Gefas-subundel Farn 22 (1847).

Cyathea Sm., Mem. Acad. Roy. Sci. (Turin) 5: 416 (1793).

Cyathea contaminans (Wall. ex Hook.) Copel., Philipp. J. Sci., C.4: 60 (1909).

Tree fern found mostly on river bank, started about 1 km up ward from the sea. Some solitary plant occur near settlement in Malakoni.

Specimens examined: In the forest near Koha Buwa-buwa *Lutjeharms 4244, 4647*; Kuala Besar, Inono *Wita Wardani 856*.

General distribution: North India and throughout Malesia.

DAVALLIACEAE M.R. Schomb., Reis. Br.-Guiana (Ri. Schomburgk) 2: 883 (1848).

Davallia Sm., Mem. Acad. Roy. Sci. (Turin) 5: 414 (1793).

Davallia denticulate (Burm.f.) Mett. ex Kuhn, Filic. Decken. 27 (1867).

Epiphyte on tree branches and trunk.

Specimens examined: On a "Terentang" tree (probably *Camptosperma* sp.) in Koha Buwa-buwa *Lutjeharms 4043*; on the trunk of a coconut tree at Pulau Merbau *Lutjeharms 5152*; near runway, Banjarsari *Ruliyana Susanti 38* (voucher specimen).

General distribution: Old world tropics.

Davallia heterophylla Sm., Mem. Acad. Roy. Sci. (Turin) 5: 415 (1793).

Epiphyte on tree trunk in the forest.

Specimens examined: Koha Buwa-buwa *Lutjeharms 4019*; Teluk Kiowa (Teluk Harapan, Kahyapu) *Lutjeharms 5192*; old forest, Boboyo, Meok *Wita Wardani 843*; Kuala Besar, Inono *Wita Wardani 859*.

General distribution: Throughout Malesia, Indochina and Pacific Islands.

Davallia pectinata Sm., Mem. Acad. Roy. Sci. (Turin) 5: 415 (1793).

Common epiphyte mainly found on lower tree trunk at the beach.

Specimens examined: At the beach southward of Koha Buwa-buwa *Lutjeharms 4247*; Kuala Besar, Inono *Wita Wardani 865*; on the sea shore of Imo, Malakoni *Wita Wardani 903*.

General distribution: Throughout Malesia, Indochina.

Davallia repens (L.f.) Kuhn, Filic. Decken. 27 (1867).

Epiphyte in humid sites.

Specimen examined: Kuala Besar, Inono *Wita*

ta Wardani 868.

General distribution: Old world tropics.

Davallia solida (G.Forst.) Sw., Schrad. J. Bot. 1800 (2): 87 (1801).

Epiphyte, not as common as in Java.

Specimen examined: Kuala Besar, Inono Wita Wardani 869.

General distribution: Throughout Malesia to Polynesia, Indochina to southern China.

Davallia trichomanoides Blume, Enum. Pl. Javae 2: 238 (1828).

Epiphyte, not as common as in Java.

Specimen examined: Old forest, Kaay, Meok Wita Wardani 805.

General distribution: Throughout Malesia, Indochina.

DENNSTAEDTIACEAE Lotsy, Vortr. Bot. Stammesgesch. 2: 655 (1909).

Synonym: *Pteridiaceae* Ching, Acta Phytotax. Sin. 13: 96 (1975).

Microlepia C. Presl, Tent. Pterid. 124 (1836).

Microlepia speluncae (L.) T. Moore, Index Fil. 93 (1857).

Terrestrial, often in disturbed land. Not as common as in Java.

Specimens examined: Secondary forest near the runway, Banjarsari Wita Wardani 832; around a cocoa plantation in Banjar Wita Wardani 878.

General distribution: Pantropical.

DRYOPTERIDACEAE Herter, Rev. Sudamer. Bot. 9: 15 (1949).

Synonyms: *Aspidiaceae* Mett. ex A.B. Frank in J. Leunis, Syn. Pflanzenk., ed.2, 3: 1469 (1874) *nom. illeg.*; *Bolbitidaceae* Ching, Acta Phytotax. Sin. 16: 15 (1978).

Bolbitis Schott., Gen. Fil. [Schott] t.14 (1835).

Bolbitis heteroclite (C. Presl) Ching ex C.Chr, Index Filic. Suppl. III: 48 (1934).

Terrestrial fern but some climbing tree trunk at low height, very common.

Specimens examined: In the forest behind Meok Lutjeharms 3598, Wita Wardani 807, 811; along the river in Koha Buwa-kowa Lutjeharms 3944, 4040; secondary forest near the runway, Banjarsari Wita Wardani 823, 824, 825.

General distribution: Throughout Malesia,

Indochina, to Ryukyu and Northern India.

GLICHENIACEAE Presl, Reliq. Haenk 1: 70 (1825).

Synonym: *Stromatopteridaceae* Bierh., Phytomorphology 18: 263 (1968).

Gleichenia Sm., Mem. Acad. Roy. Sci. (Turin) 5: 419 (1793).

Gleichenia truncate (Willd.) Spreng., Syst. Veg. 4: 25 (1827).

Synonym: *Sticherus truncatus* (Willd.) Nakai, Bull. Natl. Sci. Mus. 29: 20 (1950).

Climbing/scrambling, in open forest.

Specimens examined: On the southward way to Koha buwa-buwa Lutjeharms 3953; by the road side at Umo, Malakoni Wita Wardani 899.

General distribution: Throughout Malesia and Indochina.

HYMENOPHYLLACEAE Mart., Consp. Regni. Veg. 3 (1835).

Synonym: *Trichomanaceae* Burmeist., Hanb. Naturgesch 196 (1836).

Cephalomanes C. Presl, Hymenophyllaceae (Presl) 17 (1843).

Cephalomanes javanicum (Blume) C. Presl var. *sumatranum* (Alderw.) K. Iwats., J. Fac. Sci. Univ. Tokyo, Bot. 13(5): 549 (1985).

Synonym: *Trichomanes sumatranum* Alderw., Bull. Dept. Agric. Indes Neerl. 18: 4 (1908). Terrestrial filmy fern under the shade and on slopes.

Specimens examined: Of a small stream by a trail in the forest, near Kahyapu Lutjeharms 5339; old forest of Koha Buwa-buwa Wihermanto 1255.

General distribution: Sumatra and Borneo.

Crepidomanes C. Presl, Epimel. Bot. 258 (1851).

Crepidomanes bipunctatum (Poir.) Copel. Philipp. J. Sci. 67: 59 (1938).

Synonym: *Trichomanes bipunctatum* Poir. in Lam., Encycl. (Lamarck) 8: 69 (1808).

Lithophyte or epiphyte on muddy or mossy substrate in rather dark shady forest.

Specimens examined: Koha Buwa-buwa Lutjeharms 4061, 4339; old forest of Boboyo, Meok Wita Wardani 845, 846, 848, 849, 850; Kuala Besar, Inono Wita Wardani 871, 872.

General distribution: Old world tropic.

Didymoglossum Desv., Mem. Soc. Linn. Paris 6 (3): 330 (1872).

Didymoglossum sublimbatum (Müll. Berol.) Ebihara & K. Iwats., Blumea 51(2): 236 (2006).

Synonym: *Trichomanes sublimbatum* Müll. Berol., Bot. Zeit. 12: 737 (1854).

Lythophyte on rather muddy stone in dark shady forest.

Specimens examined: On limestone near Koha Buwa buwa *Lutjeharms* 4597A; old forest of Boboyo, Meok *Wita Wardani* 847; Kuala Besar, Inono *Wita Wardani* 873.

General distribution: India, Indochina, Southern China, Taiwan, throughout Malesia.

Hymenophyllum Sm., Mem. Acad. Roy. Sci. (Turin) 5: 418 (1793).

Hymenophyllum acanthoides (Bosch) Rosenst., Bull. Jard. Bot. Buitenzorg, Ser. 2, 2: 25 (1911).

Epiphyte filmy fern in fairly humid environment.

Specimens examined: Koha Buwa Buwa *Lutjeharms* 4188, 4115.

General distribution: Tropical Asia, north to Taiwan.

Hymenophyllum polyanthus (Sw.) Sw. Schrad. J. Bot. 1800 (2): 102 (1801).

Synonym: *Hymenophyllum blumeinum* Spreng., Syst. Veg. 4(1): 131 (1827).

Epiphyte filmy fern in humid environment.

Specimens examined: Koha Ahapea *Lutjeharms* 4634, Koha Buwa Buwa *Lutjeharms* 4052, Kaay, Meok *Wita Wardani* 812; old forest in Bendung, Banjar *Wita Wardani* 898.

General distribution: tropics and sub-tropic.

Hymenophyllum reinwardtii Bosch, Pl. Jungh. 1: 567 (1853).

Epiphyte filmy fern in fairly humid environment.

Specimens examined: Koha Buwa Buwa *Lutjeharms* 4051, 4116 A.

General distribution: Sumatra, Java, Borneo, Philippine and New Guinea.

LINDSAEACEAE. Presl ex M.R. Schomb., Reis. Br. Guiana (Ri. Schomburgk) 2: 883 (1848).

Lindsaea Dryand. Ex Sm., Mem. Acad. Roy. Sci. (Turin) 5: 413 (1793).

Lindsaea repens (Bory) Thwaites var. *pectinata* (Blume) Mett., Ann. Mus. Bot. Lugduno-Batavi 4:

277 (1869).

Epiphyte on lower part of tree trunks.

Specimens examined: Old forest of Koha Buwa Buwa *Lutjeharms* 4039, 4046, *Wita Wardani* 892, *Wihermanto* 1267.

General distribution: Throughout Malesia, extended from Mascarene to Oceania, northern India to northern Australia

MARATTIACEAE Kaulf., Enum. Filic. 31 (1824).

Synonyms: *Angiopteridaceae* Fee ex J. Bommer, Bull. Soc. Roy. Bot. Belgique 5: 345 (1867); *Christenseniaceae* Ching, Bull. Fan. Mem. Inst. Biol. 10: 227 (1940).

Angiopteris Hoffm., Comm. Soc. Reg. Gott. 12: 29 (1796).

Angiopteris evecta (G. Forst.) Hoffm., Comm. Soc. Reg. Gott. 12: 29, t. 5 (1796).

Terrestrial huge fern under the shade.

Specimens examined: Along the river in the forest near Koha Buwa-buwa *Lutjeharms* 4565, 4753; Kuala Besar, Inono *Wita Wardani* 909.

General distribution: Throughout Malesia, Pacific Islands, India and China.

NEPHROLEPIDACEAE Pic. Serm., Webbia 29: 8 (1975).

Nephrolepis Schott., Gen. Fil. (Schott.) t.3 (18340).

Nephrolepis biserrata (Sw.) Schott, Gen. Fil. ad t. 3 (1834).

Terrestrial thicket fern at rather open places.

Specimens examined: At the edge of forest in Meok *Lutjeharms* 3855; on the ground under coconut tree in Pulau Merbau *Lutjeharms* 5153; Kuala Besar, Inono *Wita Wardani* 857.

General distribution: Pantropical.

Nephrolepis hirsutula (G.Forst.) C.Presl, Tent. Pterid. 79 (1836).

Terrestrial fern on dry ground and light shade.

Specimens examined: At the edge of forest in Meok *Lutjeharms* 3840, *Wita Wardani* 809; around the runway, Banjarsari *Wita Wardani* 833; also in many site by the road side.

General distribution: Tropical Asia to Pacific.

Nephrolepis radicans (Burm.f.) Kuhn, Ann. Mus. Bot. Lugduno-Batavi 4: 285 (1869).

Terrestrial, often scrambling in thickets.

Specimens examined: In the forest near Koha Buwa-buwa *Lutjeharms 4553*; road side lead to a settlement near Kahyapu *Lutjeharms 5228*; Umo, Malakoni *Wita Wardani 895*.

General distribution: Throughout Malesia, extended to New Caledonia, also in Indochina, India and Burma.

OPHIOGLOSSACEAE Martinov, Tekhno-Bot. Slovar 438 (1820).

Synonyms: *Botrychiaceae* Horan, Char. Ess. Fam. 15 (1847); *Helminthostachyaceae* Ching, Bull. Fan. Mem. Inst. Biol. 10: 235 (1941).

Helminthostachys Kaulf., Enum. Filic. 28 (1824).

Helminthostachys zeylanica (L.) Hook., Gen. Fil. t. 47b (1840).

Terrestrial, in shady and wet forest.

Specimens examined: On the ground in the forest of Koha Buwa-buwa *Lutjeharms 4058, 4746, Wita Wardani 891*; secondary forest near the runway, Banjarsari *Wita Wardani 826*; Kaay, Meok *Wita Wardani 893*; around a creek of Kuala kecil, Umo, Malakoni *Wita Wardani 894*.

General distribution: Paleotropics.

Ophioglossum L. Sp. Pl. 2: 1062 (1753).

Ophioglossum pendulum L., Sp. Pl. ed. 2: 1518 (1763).

Epiphyte on damp tree branches.

Specimens examined: Koho Ahapea *Lutjeharms 4637*; Koha Buwa-buwa *Lutjeharms 4107, Wihermanto 1269*.

General distribution: Paleotropics.

POLYPODIACEAE J. Presl & C. Presl, Delic. Prag. 159 (1822).

Synonyms: *Grammitidaceae* Newman, Hist. Brit. Ferns 7 (1840); *Drynariaceae* Ching, Acta Phytotax. Sin. 11: 12 (1966).

Drynaria (Bory) J. Sm., J. Bot. (Hooker) 4:60 (1841).

Drynaria sparsisora (Desv.) T. Moore, Index Filic. 348 (1862).

Epiphyte on trees by the beach.

Specimens examined: In Teluk Kiowa (Teluk Harapan, Kahyapu) *Lutjeharms 5214*; on a trunk in a sea shore of Umo, Malakoni *Wita Wardani 902, 905*.

General distribution: SE Asia to Australia.

Microsorium Link., Hort. Berol. [Link.] 2:110 (1833).

Microsorium punctatum (L.) Copel., Univ. Calif. Publ. Bot. 16: 111 (1929).

A common epiphyte on lower tree trunks.

Specimens examined: In the forest near Koha Buwa-buwa *Lutjeharms 4750*; behind Kaana *Lutjeharms 4999*, Boboyo *Lutjeharms 5019, Wita Wardani 842*; at Pulau Merbau *Lutjeharms 5151*; near Kahyapu *Lutjeharms 5251*; Pulau Dua *Lutjeharms 5293*; on the way to Bak Blau, Meok *Wita Wardani 799*.

General distribution: Paleotropics and subtropics.

Microsorium scolopendria (Burm. f.) Copel., Univ. Calif. Publ. Bot. 16:112 (1929).

Synonym: *Phymatosorus scolopendria* (Burm. f.) Pic. Serm., Webbia 28: 460 (1973).

Terrestrial in open places.

Specimens examined: On the ground under coconut tree in Pulau Dua *Lutjeharms 5288*; by the road side of Umo, Malakoni *Wita Wardani 896*.

General distribution: Old world tropics.

Pyrrosia Mirb., Hist. Nat. Veg. [Lam. & Mirbel] 3: 471; 5: 91 (1802).

Pyrrosia lanceolata (L.) Farw., Amer. Midl. Natur. 12: 245 (1931).

Very common epiphyte on lower tree trunk.

Specimens examined: Pulau Merbau *Lutjeharms 5156*; near Kyoyo *Lutjeharms 4694, 4246*; Bak Blau *Wita Wardani 802*; Boboyo, Meok *Wita Wardani 851*; a creek of Sungai Jangkar, Malakoni *Wita Wardani 877*; sea shore, Umo, Malakoni *Wita Wardani 904*.

General distribution: Sri Lanka to Himalaya, Indochina, Southern China and Taiwan, throughout Malesia to Polynesia.

PTERIDACEAE E.D.M. Kirchn., Schul-Bot. 109 (1831).

Synonyms: *Parkeriaceae* Hook., Exot. Fl. 2 ad t.147 (1825); *Adiantaceae* Newman, Hist. Brit. Ferns 5 (1840), *nom. cons.*, *Acrostichaceae* Mett. ex A.B. Frank in J. Leunis, Syn. Pflanzenk., ed.2, 3:1453 (1874); *Ceratopteridaceae* Underw., Our Native Ferns ed. 6: 65 (1900); *Vittariaceae* Ching, Sunyatsenia 5: 210 (1940); *Taenitidaceae* Pic. Serm., Webbia 29: 1 (1975); *Anthrophyaceae*

Ching, *Acta Phytotax. Sin.* 16: 11 (1978).

Acrostichum L., *Sp. Pl.* 2: 1067 (1753).

Acrostichum aureum L., *Sp. Pl.* 2:1069 (1753).

Common on wet land site near the sea shore.

Specimens examined: By the beach near Kioyoh *Lutjeharms* 4686; at the edge of the road near Kahyapu *Lutjeharms* 5238, 5248; by the road side of Umo, Malakoni (marsh-like environment) *Wita Wardani* 900.

General distribution: pantropical and subtropical (Japan, South Africa).

Adiantum L., *Sp. Pl.* 2: 1094 (1753).

Adiantum latifolium Lam, *Encycl. (J. Lamarck & al.)* 1(1): 43 (1783).

Terrestrial fern, common as ornamental.

Specimen examined: Only one specimen, found near the boundary of the old forest with a plantation in Kaay, Meok *Wita Wardani* 815.

General distribution: Neotropics, naturalized in paleotropics.

Antrophyum Kaulf. *Enum. Filic.* 197 (1824).

Antrophyum reticulatum (G. Forst.) Kaulf., *Enum. Filic.* 198 (1824).

Fairly common epiphyte on a lower tree trunks.

Specimens examined: In the forest near Meok *Lutjeharms* 3605; near Koha Buwa-buwa *Lutjeharms* 4758; Kaay, Meok *Wita Wardani* 813, Kuala Besar, Inono *Wita Wardani* 852.

General distribution: Throughout Malesia, Polynesia, Northern Australia.

Ceratopteris Brongn., *Bull. Sci. Soc. Philom. Paris* 1821: 186 (1822).

Ceratopteris thalictroides (L.) Brongn., *Bull. Sci. Soc. Philom. Paris* 1821: 186 (1822).

Terrestrial in wet soil or flooded areas.

Specimens examined: Meok, on paddy field behind Pasanggrahan *Lutjeharms* 3826; on a pond near Bak Blau *Marlina Ardiyani* 24.

General distribution: Throughout the world in warmer region.

Haplopteris C. Presl., *Tent. Pterid.* 141 (1836).

Haplopteris elongate (Sw.) E.H. Crane, *Syst. Bot.* 22: 514 (1998).

Synonym: *Vittaria elongata* Sw., *Syn. Fil.*

109, 302 (1806).

Common epiphyte on a lower tree trunks.

Specimens examined: In the forest near Koha Buwa-buwa *Lutjeharms* 4308, 4309; at the beach of Kioyoh *Lutjeharms* 4675; on coconut tree in Pulau Dua *Lutjeharms* 5310; near Kahyapu *Lutjeharms* 5359; Bak Blau, Meok *Wita Wardani* 800, 803; Boboyo, Meok *Wita Wardani* 841.

General distribution: old world tropics, north to southern edge of Japan.

Pityrogramma Link, *Handbuch* 3: 19 (1833).

Pityrogramma calomelanos (L.) Link, *Handbuch* 3: 20 (1833).

Terrestrial in open places.

Specimens examined: Behind Meok of a ditch *Lutjeharms* 5090; in a plantation, Bukit Jangkar *Wita Wardani* 907.

General distribution: Throughout the tropics, likely spread by human.

Pteris L., *Sp. Pl.* 2:1073 (1753).

Pteris longipinnula Wall. ex J. Agardh, *Recens. Spec. Pter.* 19 (1839).

Terrestrial shady fern near wet environment.

Specimen examined: On a bank of a creek at Bendung, Banjar *Wita Wardani* 880.

General distribution: South India, Thailand, Malesia.

Pteris vitata L., *Sp. Pl.* 1074 (1753).

Common terrestrial fern by the road sides and around human settlements, not collected.

General distribution: Tropics and subtropics of the old world to southern Japan.

Pteris walichiana J. Agardh, *Recens. Spec. Pter.* 69 (1839).

[often miss-identified as *P. tripartita* Sw.]

Terrestrial fern, purple stipe to over 1 m, on open partially shaded water-logged site.

Specimen examined: Boboyo, Meok *Wita Wardani* 837.

General distribution: North India, South China, Laos, Thailand, Peninsular Malaysia.

Taenitis Willd. ex Schkuhr., *Kl. Linn. Pfl.-Syst.* 1: 20 (1804).

Taenitis blechnoides (Willd.) Sw., *Syn. Fil.* 24, 220 (1806).

Terrestrial in shaded environment.

Specimen examined: Near Kahyapu *Lutjeharms 5314*.

General distribution: In the tropics, from Sri Lanka to Fiji.

SCHIZAEACEAE Kaulf., Wesen Farrenkr. [119] (1827).

Lygodium Sw., J. Bot. (Schrader) 1800 (2): 7, 106 (1801).

Lygodium circinatum (Burm.f.) Sw., Syn. Fil. 153 (1806).

Scrambling on bushes and tree trunk.

Specimens examined: At the edge of forest among bushes *Lutjeharms 3851*; in old human settlement by Koha Buwa-buwa *Lutjeharms 4054*; by the road side near Kahyapu *Lutjeharms 5250*; Bak Blau, Meok *Wita Wardani 798*.

General distribution: Sri Lanka, NE India, Indochina, Malesia eastward to Solomons.

Lygodium microphyllum (Cav.) R. Br., Prodr. Fl. Nov. Holland. 162 (1810).

Common scrambling species, along the road on bushesh in the forest and plantations.

Specimens examined: Kahyapu Kiyah *Lutjeharms 5392*; near Kahyapu *Lutjeharms 5253*; by a paddy field, Meok *Lutjeharms 3816*; Umo, Malakoni *Wita Wardani 897*.

General distribution: tropical Africa, Asia, Melanesia, North- and Eastern Australia southward to N.S. Wales.

Schizaea Sm., Mem. Acad. Roy. Sci. (Turin) 5: 419, pl. 9, f. 9 (1793).

Schizaea dichotoma (L.) Sm., Mem. Acad. Roy. Sci. (Turin) 5: 422 t. 9 (1793).

Terrestrial, rather rare.

Specimen examined: In the forest near Kahyapu *Lutjeharms 5358*.

General distribution: Islands in Indian Ocean and Pacific Ocean, Ryukyus to New Zealand.

TECTARIACEAE Panigrahi, J. Orissa Bot. Soc. 8: 41 (1986).

Synonyms: *Dictyoxiphaceae* Ching, Sunyatsenia 5: 205, 218 (1940), *nom. inval.*; *Hypoderriaceae* Ching, Sunyatsenia 5: 209, 245 (1940), *nom. inval.*

Pleocnemia C. Presl., Tent. Pterid. 183, pl.7, f.12 (1836).

Pleocnemia irregularis (C. Presl) Holttum, Kew Bull. 29: 347 (1974).

Fairly common lowland terrestrial fern.

Specimens examined: In the intact forest at Meok *Lutjeharms 3601*; Meok at the edge of forest among bushes *Lutjeharms 3854*; in Koha Buwa-buwa of an old settlement *Lutjeharms 4020*; in the forest of Koha Buwa-buwa *Lutjeharms 4184*; near Kahyapu at the road bank *Lutjeharms 5333*; Secondary forest around a runway, Banjarsari *Wita Wardani 822*; in an abandoned plantation at Bendung, Banjar *Wita Wardani 879*.

General distribution: Throughout Malesia, Indochina, Polynesia.

Tectaria Cav., Ann. Hist. Nat. 1:115 (1799).

Tectaria aurita (Sw.) S. Chandra, Kalikasan 12: 157 (1983).

Terrestrial on limestone substrate.

Specimens examined: In the forest near Koha Buwa-buwa *Lutjeharms 4600*; Boboyo, Meok *Wita Wardani 838*; on a creek bank of Sungai Jangkar, Malakoni *Wita Wardani 875, 876, 908*.

General distribution: Throughout Malesia but absent in Malay Peninsula, extend to Solomon Island and New Hebrides.

THELYPTERIDACEAE Pic. Serm., Webbia 24: 709 (1970).

Christella H. Lev., Fl. Kouy-Tcheou 472 (1915).

Christella dentate (Forssk.) Brownsey & Jermy, Brit. Fern. Gaz. 10: 338 (1973).

Synonym: *Cyclosorus dentatus* (Forssk.) Ching, Bull. Fan. Mem. Inst. Biol. 8: 206 (1938).

Terrestrial at open places.

Specimens examined: At the road edge near Kahyapu *Lutjeharms 5253*, Kaay, Meok *Wita Wardani 806, 808*.

General distribution: Throughout tropic and subtropic of the old world.

Cyclosorus Link, Hort. Berol. [Link.] 2: 128 (1833).

Cyclosorus interruptus (Willd.) H. Ito, Bot. Mag. Tokyo 51: 714 (1937).

Terrestrial in an open marsh-like environment.

Specimen examined: By the road side of Umo, Malakoni *Wita Wardani 901*.

General distribution: pantropical.

Pronephrium C. Presl., Epimel. Bot. 258 (1851).

Pronephrium asperum (C. Presl) Holttum, Blumea 20: 112 (1972).

Synonym: *Cyclosorus asperus* (C. Presl) B.K. Nayar & Kaur, Companion Beddome's Handb. Ferns Brit. India 66 (1974).

Terrestrial on slope, stream bank.

Specimens examined: Kuala Besar, Inono *Wita Wardani* 864; Sungai Jangkar, Malakoni *Wita Wardani* 874.

General distribution: Malesia, Indochina, to Taiwan and North Australia.

Pronephrium glandulosum (Blume) Holttum, Blumea 20: 118 (1972).

Synonym: *Cyclosorus glandulosus* (Blume) Ching, Bull. Fan. Mem. Inst. Biol. 8: 227 (1938).

Terrestrial near stream.

Specimen examined: Kuala Besar, Inono *Wita Wardani* 861.

General distribution: Western Malesia and Indochina.

Sphaerostephanos J. Sm., Gen. Fil. [Hooker] t. 24 (1839).

Sphaerostephanos polycarpus (Blume) Copel, Univ. Calif. Publ. Bot. 16:60 (1929).

Synonym: *Cyclosorus polycarpus* (Blume) Hottum, Rev. Fl. Malaya ed.1, 2: 283, f.164 (1955).

Terrestrial of shady environment.

Specimens examined: Kaay, Meok *Wita Wardani* 804; Boboyo, Meok *Wita Wardani* 836.

General distribution: Malesia.

Trigonospora Holttum, Blumea 19: 29 (1971).

Trigonospora calcarata (Blume) Holttum in B.K. Nayar & S. Kaur, Companion Beddome's Handb. Ferns Brit. India 203 (1974).

Specimen examined: On the stone of the stream Kali Kionopa *Lutjeharms* 3955.

General distribution: Sri Lanka and throughout Malesia.

ACKNOWLEDGEMENT

Our trip were funded through Indonesian Institute of Science budget 2015 for the flagship project entitled "Bioresources Expedition to The Island of Enggano".

REFERENCES

- Alderwerlt van Rosenburgh CRWK van. 1909. *Malayan Ferns. Handbook to the Determination of the Ferns of the Malayan Islands incl. those of the Malay Peninsula, the Philippines and New Guinea*: 458, 474–475. Landsdrukkerij, Batavia.
- Alderwerlt van Rosenburgh CRWK van. 1917. *Malayan Ferns and Fern Allies, Supplement 1*: 290. Landsdrukkerij, Batavia.
- Anwar J, Damanik SJ, Hisyam N & Whitten AJ. 1984. *Ekologi Ekosistem Sumatera*. Gajah Mada University Press. Jogjakarta
- Bremekamp CEB. 1938. A new species of *Ixora* from Enggano (Sumatra). *Blumea* 3 (1): 106–107.
- Christenhusz MJM, Zhang X, & Schneider H. 2011. A linear sequence of extant families and genera of lycophytes and ferns. *Phyto-taxa*. 19: 7–54
- Ebihara A, Dubuisson J, Iwatsuki K, Hennequin S & Ito M. 2006. A Taxonomic revision of *Hymenophyllaceae*. *Blumea* 51: 1–60
- Ekorusyono YY & Yuwono A. 2012. *Enggano: Kecamatan di Tengah Samudera*. Penerbit Ombak, Yogyakarta.
- Hannequin S, Kessler M, Lindsay, S & Schneider H. 2014. Evolutionary patterns in the assembly of fern diversity on the Oceanic Mascaren Islands. *J. Biogeogr.* 41(9): 1651–1663
- Holttum RE. 1959. *Gleicheniaceae. Flora Malesiana Ser. II Fern and Fern Allies* 1(1): 1–36 Rijksherbarium/Hortus Botanicus. Leiden
- Holttum RE. 1959a. *Schizaeaceae. Flora Malesiana Ser. II Fern and Fern Allies* 1(1): 37–61 Rijksherbarium/Hortus Botanicus. Leiden
- Holttum RE. 1963. *Cyatheaceae. Flora Malesiana Ser. II Fern and Fern Allies* 1(2): 65–176 Rijksherbarium/Hortus Botanicus. Leiden
- Holttum RE. 1978. Lomariopsis Group. *Flora Malesiana Ser. II Fern and Fern Allies* 1(4): 255–330. Rijksherbarium/Hortus Botanicus. Leiden
- Holttum RE. 1981. *Thelypteridaceae. Flora Malesiana Ser. II Fern and Fern Allies* 1(5): 331–560. Rijksherbarium/Hortus Botanicus. Leiden
- Holttum RE. 1991. Tectaria Group. *Flora Malesiana Ser. II Fern and Fern Allies* 2(1): 1–132. Rijksherbarium/Hortus Botanicus. Leiden
- Holttum RE † & Nootboom HP. 2012. 4. *Stenochlaena*. In: Nootboom HP (ed.). *Flora*

- Malesiana, Ser. II, Ferns and Fern Allies* 4: 72–75
- Hovenkamp PH, Bosman MTM, Hennisman E, Nootboom HP, Rödl-Linder G & Roos MC. 1998. *Polypodiaceae*. In: Kalkman C. et al. (eds). *Flora Malesiana, Ser. II, Ferns and Fern Allies* 3: 1–234. Rijksherbarium/Hortus Botanicus, Leiden
- Hovenkamp PH & Miyamoto F. 2012. *Nephrolepidaceae*. In: Nootboom HP (Ed.). *Flora Malesiana, Ser. II, Ferns and Fern Allies* 4: 97–122
- Kramer KU. 1971. *Lindsaea* Group. *Flora Malesiana Ser. II Fern and Fern Allies* 1 (3): 177–254 Rijksherbarium/Hortus Botanicus. Leiden
- Lindsay S & Middleton DJ. 2012 onward. *Ferns of Thailand, Laos and Cambodia*. <http://rbg-web2.rbge.org.uk/thaiferns/> (last accessed: 26 January 2017)
- Lutjeharms WJ van & Oostroom SJ van. 1938. Two new *Lecythidaceae* and two new *Apocynaceae* from Malaysia. *Blumea* 3(1): 95–105
- Maryanto I. (Ed.) 2015. *Ekspedisi Bioresources Pulau Enggano*. Kedeputian Bidang Ilmu Hayati, Lembaga Ilmu Pengetahuan Indonesia. Jakarta
- Nootboom HP. 1998. *Davalliaceae*. In: Kalkman, C. et al. (eds). *Flora Malesiana, Series II, Ferns and Fern Allies* 3: 235–276. Rijksherbarium/Hortus Botanicus, Leiden.
- Nootboom HP, Sedayu A & Hovenkamp PH. 2012. *Pteridaceae*, Subfamily Parkerioideae. In: Nootboom HP (ed.). *Flora Malesiana, Ser. II, Ferns and Fern Allies* 4:137–144
- Regen R. 2011. *Profil Kawasan Konservasi Enggano*. Balai Konservasi Sumber Daya Alam (BKSDA) Propinsi Bengkulu, Bengkulu.
- Steenis-Kruseman MJ van. 1950. Illustrated alphabetical list of the collectors. *Flora Malesiana Ser. I Vol.1*. Noordhoff-Kolff, Jakarta.
- Wardani W, Hidayat H & Darnaedi D. 2012. The new Pteridophyte classification and sequence employed in the Herbarium Bogoriense (BO) for Malesian ferns. *Reinwardtia* 13(4): 367–378.