

Short Notes

A note on the Diversity of Rare and Wild Fruits Species in Sungai Kangkawat RS, Imbak Canyon Conservation Area (ICCA), Tongod, Sabah, Malaysia

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Abstract

Rare and wild fruits diversity of Sungai Kangkawat Research Station, Imbak Canyon Conservation Area (ICCA), Tongod District, Sabah Malaysia was inventorised for flora composition assessment. A total of 34 species of rare and wild fruits species were identified along three trails, namely Kawang, Nepenthes and Pelajau. During this inventory trip, only a few species were fruiting due to unsynchronized fruiting season. The inventorised species consist of 21 important genera namely *Artocarpus*, *Alstonia*, *Aralidium*, *Baccaurea*, *Cissus*, *Cnestis*, *Durio*, *Diospyros*, *Dacryodes*, *Ficus*, *Garcinia*, *Gironniera*, *Goniothalamus*, *Horsfieldia*, *Lasianthus*, *Lepisanthes*, *Lithocarpus*, *Mangifera*, *Osmosium*, *Rhodomyrtus* and *Uvaria*. A total of 61 herbarium specimens from various wild species were also collected and prepared from the trails for safe deposition at the respective herbaria.

Keywords: Rare fruits, Wild fruits, Sungai Kangkawat, Imbak Canyon Conservation Area, Tongod, Sabah, Malaysia

Introduction

Rare and wild fruits species diversity is an important component of Malaysia's biodiversity. Our warm and humid tropical climate stimulates and harbours vast diversity of these species in our tropical rainforests and it is estimated 370 species of rare and wild fruits species are still thriving in the forest fringes, homegardens and orchards with most of them in semi domesticated state without any significant attention given (Ong 2004; Rukayah 2004). In view of this situation, it is important to record and document the diversity and uses of these wild fruits species that can be a useful source of the genetic pool for

horticultural fruits species as well for nutritional and phytochemistry analysis. One of the important sites that can be considered a natural Gene-bank for these wild fruits species is located in Sabah, Borneo - Imbak Canyon Conservation Area (ICCA), Tongod District. This site spans a newly gazetted Class I (Protection) Forest Reserve of pristine rainforests and is considered rich in plant biodiversity as well as home for many rare and endangered animal species (Chua & Suleiman 2015; Latiff & Sinun 2011). A plant inventory survey was carried out in Sungai Kangkawat Research Station from 29th September to 2nd October 2018, aiming to document the diversity of rare and wild fruits species and to enrich herbarium collections.

Methodology

Sungai Kangkawat Research Station is one of the main conservation plots in Imbak Canyon Conservation Area (ICCA), Tongod District, Sabah, Borneo Malaysia. During this inventory, trails provided in Sungai Kangkawat Research Station were botanised and the diversity of rare and wild fruits species that are available in this plot were recorded. Three trails provided for research purpose in this inventory were tagged as Nepenthes, Kawang and Pelajau trail. The main objective of this inventory is to provide a checklist of the fruits diversity using Rapid Plant Assessment Technique in which the plant listing was recorded on the surveyed trails and important plant parts (morphological and fertile specimens) were collected for further evaluation. This technique covers 10m radius on the the right and left sides of the trails to ensure the full plant compositions of these trails were fully inventorised. Plant description were referred to Corner (1952); Soepadmo et al. (2014) & Turner (1995). Specimens are deposited in the MDI and BORH Herbarium and recorded in the Agrobiodiversity Information System (AgroBIS) database. The checklist contained vouchers, herbarium records and also sighted record.

Results and Discussion

This inventory reported 34 species that are available along the provided trails in Sungai Kangkawat RS (Imbak Canyon Conservation Area), with frequency of two to four individuals of every species existing along trails. From this observation, ecology of those rare and wild fruits species were dominated by seedlings to medium-sized trees, that occurred with the mature fruit trees species. Table 1 shows the list of species observed, with the type of plant form. Systematic diversity of this survey showed the composition of the important rare and wild fruits species in this site consists of 21 genera in 20 families.

Table 1. List of species inventorised in three trails in Sungai Kangkawat Research Station.

Family	Species	Plant type
Actinidiaceae	<i>Actinidia</i> sp.	Tree
Anacardiaceae	<i>Mangifera caesia</i>	Tree
	<i>Mangifera</i> sp. 3	Tree
	<i>Mangifera</i> sp. 4	Tree
Annonaceae	<i>Uvaria borneensis</i>	Woody climber
	<i>Goniothalamus</i> sp.	Tree
Apocynaceae	<i>Alstonia</i> sp.	Tree
Torreelliaceae	<i>Aralidium pinnatifidum</i>	Tree
Malvaceae	<i>Durio griffithii</i>	Tree
	<i>Durio grandiflorus</i>	Tree
	<i>Durio graveolens</i>	Tree
	<i>Durio oxleyanus</i>	Tree
Burseraceae	<i>Dacryodes</i> sp.	Tree
Connaraceae	<i>Cnestis</i> sp.	Tree
Ebenaceae	<i>Diospyros lanceifolia</i>	Tree
Phyllanthaceae	<i>Baccaurea tetrandra</i>	Shrub - Tree
	<i>B. parviflora</i>	Tree
	<i>Baccaurea</i> sp. 2	Tree
Fagaceae	<i>Lithocarpus</i> sp.	Tree
Guttiferae	<i>Garcinia griffithii</i>	Tree
	<i>Garcinia</i> sp.	Tree
Leguminosae	<i>Osmosia</i> sp.	Tree
Meliaceae	<i>Aglaiia borneensis</i>	Tree
Moraceae	<i>Ficus punctata</i>	Tree
	<i>Artocarpus elasticus</i>	Tree
	<i>Artocarpus lowii</i>	Tree
	<i>Artocarpus</i> sp.	Tree
Myrtaceae	<i>Rhodomyrtus</i> sp.	Tree
Myristicaceae	<i>Horsefieldia</i> sp.	Tree
Rubiaceae	<i>Lasianthus borneensis</i>	Tree
Sapindaceae	<i>Lepisanthes alata</i>	Tree
	<i>L. tetraphylla</i>	Tree
	<i>L. amoena</i>	Tree
Ulmaceae	<i>Girroniera nervosa</i>	Tree
Vitaceae	<i>Cissus</i> sp.	Climber

Several interesting species that bear fruits such as *Uvaria borneensis* (Annonaceae) were also encountered during our survey. This *Uvaria borneensis* is locally known as pisang - pisang group is categorised as a woody climber is unique as out of 24 species and 9 genera recorded in Malaysia, 17 species (4 genera) are categorised as native to Sabah and Sarawak (Soepadmo et al. 2014). Other than that, it is clearly indicated from our records and sighted species that

the Anacardiaceae, Malvaceae, Rubiaceae and Moraceae formed the majority plant coverage of wild and rare fruits family represented by 34 species in 21 genera.

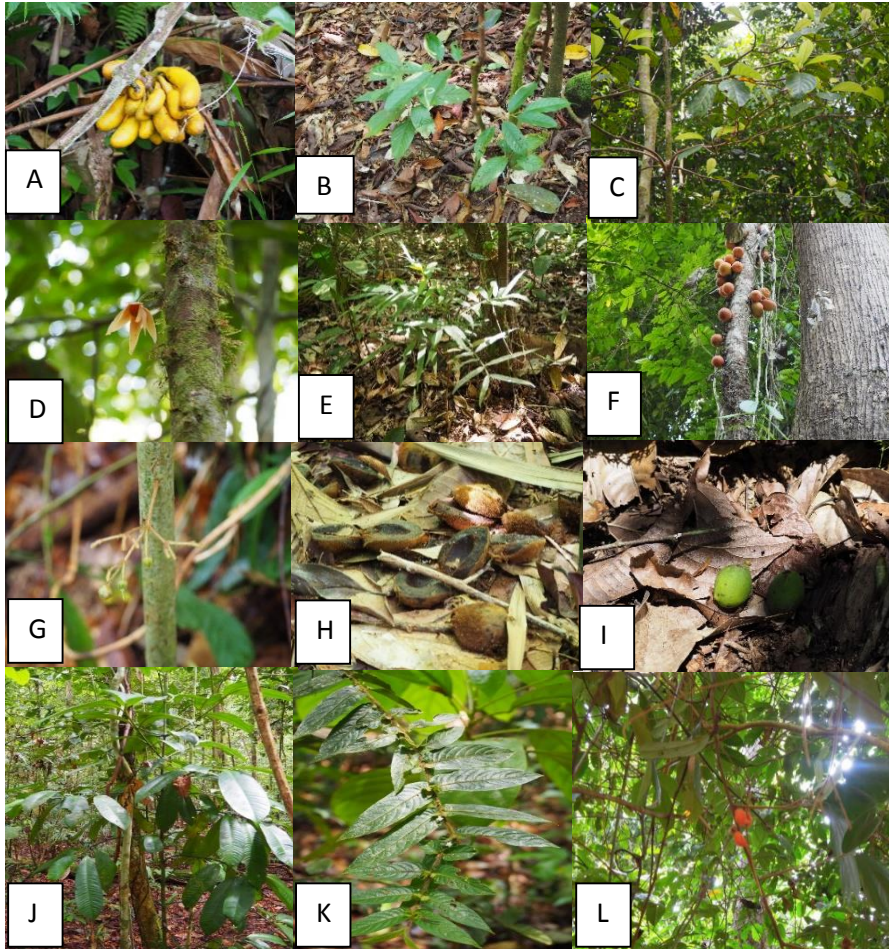


Figure 1. Plate of rare and wild fruits species. A) *Uvaria borneensis*, B) *Durio griffithii*, C) *Baccaurea tetrandra* D) *Goniothalamus* sp., E) *Lepisanthes alata*, F) *Ficus punctata*, G) *Actinidia* sp., H) *Horsfieldia* sp., I) *Mangifera* sp., J) *Garcinia griffithii*, K) *Lasianthus* sp., L) *Aglaiia borneensis*

Important rare and wild fruits genera observed along the provided trails are *Artocarpus*, *Alstonia*, *Aralidium*, *Baccaurea*, *Cissus*, *Cnestis*, *Durio*, *Diospyros*, *Dacryodes*, *Ficus*, *Garcinia*, *Gironniera*, *Goniothalamus*, *Horsfieldia*, *Lasianthus*, *Lepisanthes*, *Lithocarpus*, *Mangifera*, *Osmosium*, *Rhodomyrtus* and *Uvaria*, this

is agreeable with the rich diversity of Borneo's wild fruits species that can be found on this island (Agriculture and Agrifood Department Brunei, 2017).

In conclusion, the diversity of rare and wild fruits of Imbak Canyon Conservation Area is diverse in genera and species for Bornean taxa. However, our studies have only covered the accessible trails in this conservation area, and it is suggested that further inventurisation should be conducted, critically during the forest's fruiting season to attain complete specimens and identification of its diversity.

Conclusion

High diversity of the wild and rare fruits species was expected as 34 species of rare and wild fruits species were identified in the observed trails from the total area. Thus, further studies about the diversity in this area should be conducted. It is suggested the site's present condition is preserved with more emphasis and constructive efforts for conservation of Imbak Canyon's ecological habitats to ensure the diversity of these rare and wild fruits species can be conserved with their natural elements.

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