FRIM in FOCUS

MS ISO 9001:2008 • ISSN 1394-5467

A Quarterly of the FOREST RESEARCH INSTITUTE MALAYSIA

MARCH 2013

Highlights of this *issue*

In Conjunction with Forestry Day 2013

- Tropical Forest Research at a Glance
- Fun with Environmental Education
- FRIM Heritage Site. The Pride of the Nation
- Do Green Spaces Evoke Fear?

Dr Norini Haron —Deputy Director General (Operations) of FRIM

FRIM ELECTS THE NEW DEPUTY DIRECTOR GENERAL (OPERATIONS)

Dr Norini Haron, who was the Research and Corporate Planning Division Director of Forest Research Institute Malaysia (FRIM) has been appointed to serve as the Acting Deputy Director General (Operations) of the Institute effective 1 January 2013 following the official retirement of Puan Wan Rahmah Wan Raof.

Hill forest at Negeri Sembilan

Chew Ming Yee

TROPICAL FOREST RESEARCH AT A GLANCE

Wan Mohd Shukri Wan Ahmad
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Research & development (R&D) is essential for upgrading the scientific and technological capabilities of the country and its manpower. Effective implementation of R&D findings will require strengthening of the management of science and technology.

In forestry, policy-making is supported by R&D particularly in sustainable forest management. Greater attention is presently directed towards the commercialisation of R&D results generated by the forestry research institutions. Commercialisation activities accelerate the transfer of technologies to the private sector. The timber production and utilisation industries have benefited from development of the related technologies. These technologies were also in line with sustainable forest management practices.

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Design & Printing : Concept Press Sdn Bhd

Cover photo: A Ficus tree taken in April 2012 during a botanical expedition to Pulau Tioman, Pahang, organised by FRIM Forest Biodiversity Division team. Its humongous size is highly apparent when compared to the people near it. (Photo credit: Ong Poh Teck)

Raja Barizan Raja Sulaiman

Mangrove research site at
Sg Haji Dorani, Kuala Selangor

In its early days, research activities were mainly characterised by the discovery phase. Substantial effort was spent in discovering the forest environment. Work concentrated on collecting specimens for the herbarium, establishing arboreta, demarcating of virgin jungle reserves, and defining botanical and taxonomic characteristics of the forest environment.

Later, research activities were directed to the understanding phase. At this stage, results from the discovery phase were processed and synthesised. Studies on plant succession, classification of tree species, regeneration, growth and wood anatomy were activities that illustrate this phase. Researchers during this period strive to understand the environment, the relationship between the objects and the phenomena in order to categorise the subjects of their studies.

The understanding phase is still being actively pursued, for researchers are far from fully comprehending the complexities of the tropical forest environment and the secrets of its timber resource. A correct understanding of the resources, the various processes and linkages between them is an important prerequisite for the next phase, i.e. the experimental or the developmental phase.

The final phase is the developmental phase, whereby results of experiments are used to develop new products,

Asmar Hassan

Researchers during FRIM Innovation Day 2012

technologies, procedures and to improve existing practices. The inclusion of economics and real world situations to experimental findings is a highly beneficial aspect of this phase. Developmental research work have well-defined objectives and targets based on factors that are most useful and beneficial to the country.

Forestry research requires a long-term and concerted effort in determining the right techniques for managing and utilising the natural resources on a sustainable basis to avoid detrimental effects to the environment. During these past few decades the world is facing a critical problem especially pertaining to biodiversity and climate change which have to be addressed.

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FUN WITH ENVIRONMENTAL EDUCATION

Azyyati Abdul Kadir, Dr Noor Azlin Yahya & Naimah Che Long
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3


4


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2

Environmental education activities are exciting, interactive and provide innovative ways of outdoor learning. A good programme enables people of all ages and abilities to develop knowledge as well as social skills by connecting to nature in a meaningful way. An outdoor environmental programme is actually a fun outing among friends with an intention of discovering nature by doing activities such as planting a tree and making nature crafts. Besides providing fun and leisure, these activities help build self-esteem and enhance practical skills among participants. Communication, social and leadership skills can be nurtured through group activities, while awareness and responsibility towards nature and the environment can be created through good environmental experiences.

In line with the client charter of providing professional services and facilities to enhance public awareness on the importance of natural resources, Forest Research Institue Malaysia (FRIM) has been conducting many interactive outdoor educational programmes for the public, especially for students. Open spaces and nature resources within FRIM campus also support a variety of nature education activities in line with requirements of the school co-curriculum.

For example, in conjunction with the International Forestry Day in 2012, FRIM conducted an awareness programme for Sekolah Kebangsaan Kepong, a primary school located within FRIM campus as part of its corporate social responsibility initiative. Sixty standard six students were involved in the awareness programme.

Activities were designed to enhance the students' awareness and appreciation towards the environment and instill a sense of responsibility

on caring for the forest environment. The programme also served to promote FRIM as an eco-educational destination.

The half-day programme was designed similar to the popular explorace television programme with several checkpoints. At these points students will participate in nature activities that enhance enjoyment, knowledge and interest in nature and conservation effort. In groups of eight students, they started at the Coniferatum area and moved to Keruing trail followed by Salleh trail where they were given the opportunity to learn about plants. Each group was also responsible to plant a tree at the Malay Traditional House. At the last two checkpoints located at the Sg Kroh picnic area, they were required to practice recycling waste by using the recycle bins. The programme ended with a telematch and later, a short presentation was delivered by the instructor who encouraged the participants to be responsible towards the sustainability of FRIM's forest.

From their feedback the organisers found that 97% of the students would like to practice what they have learnt during the event into their everyday lifestyle meanwhile 93% would like to share their experiences with other friends. FRIM Environment Education Section will conduct a similar programme in 2013 as a continuous effort to nurture environmental awareness among stakeholders of FRIM.

1. Jigsaw puzzle activity for ice-breaking
2. Searching for the answer at the interpretive panel
3. Students learnt about leaves in one of the activities
4. It's time to use the recycle bin
5. Students enjoyed the tree-planting activity
6. Students read the pledge to be responsible for plants around them after the planting activity
7. Time for telematch

ABOUT THE MAIN AUTHOR

Nik Azyyati Abdul Kadir is a research officer and head of Environmental Education Section, Ecotourism and Urban Forestry Programme. Her field of expertise is environmental education programme development and programme evaluation.

FRIM HERITAGE SITE
THE PRIDE OF THE NATION

The Dipterocarp Arboretum at FRIM

Forest Research Institute Malaysia (FRIM) campus as it is seen today is blessed with a rich diversity of flora and fauna thriving in an area that spans to 544.3 hectares. As early as 1926, researchers and conservators of forest have started work to rehabilitate the former degraded land in preparation for the establishment of the then Forest Research Institute (FRI). At that time, green areas were almost non-existent and small parts of land formed pockets of remnant forest left behind from tin mining activities.

After more than 100 years, FRIM grounds have regenerated into a beautiful forest which is home to a multitude species of flora and fauna. The campus is by far the oldest regenerated forest which has a composition that is similar to a natural forest. FRIM areas of Bukit Lagong and Bukit Hari are known to contain more than 2300 tree species of local as well as exotic origins while the arboretum is one of the best tropical arboreta which permits easy access.

Most importantly, FRIM campus is a significant green lung area which is situated in proximity with Kuala Lumpur, the federal capital and the most populous city in Malaysia. Its vegetation cover of more than 80% is highly regarded not only because of the scientific knowledge churned out by its researchers but also its role as a popular destination for tropical forest-based ecotourism.

FRIM gained recognition in 2009 for its unique forest environment when it was declared as the *Natural Heritage Site* by the Department of Natural Heritage. The heritage status highlights the various roles of the campus in tropical forest research, environmental education, biodiversity conservation as well as ecotourism. Being a heritage site will assist in ensuring that FRIM campus will be protected against developments that threaten its environment. The conservation of FRIM forest will benefit the public and serves as a legacy for generations to come. Attaining the Natural Heritage Site is also the first step to propel FRIM towards achieving further recognitions at higher levels.

The tireless effort led by FRIM top leader continued from securing the natural heritage site to a higher level when in 2012 FRIM was declared the *National Heritage Site* by the Ministry of Information Communication and Culture. FRIM reputation as a Malaysian heritage ascended a notch higher when the campus joined the present seven locations of the Natural Heritage sites in Malaysia. The list includes the Mulu National Park, the Kinabalu National Park, the Royal Belum Park, the Kuala Lumpur Perdana Botanical Gardens (Lake Gardens), the Gunung Ledang National Park and the Tanjung Piai National Park. National Heritage is fairly more difficult to attain as it requires among others, having a *Conservation Management Plan* concerning the legacy of its natural objects and

Asmar Hassan

Children having an enjoyable time at Sungai Kroh admist the lush greeneries of FRIM campus

intangible attributes encompassing the natural environment such as the biodiversity of flora and fauna as well as the geodiversity of geology and landforms.

Having conquered at the national level, FRIM campus undeniably possess the necessary attributes to prove itself at the international level i.e. the World Heritage Site (WHS) Centre which is administered by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The World Heritage includes sites in its listing which are of outstanding cultural or natural importance to the common heritage of humanity. Through the international initiative, places such as forest, mountain, lake, desert, monument, building, complex, or a city are listed for having special cultural or physical significance.

At FRIM, efforts are currently underway to list the Institute as one of the World Heritage Sites. The secretariat for FRIM WHS-UNESCO Programme was established in August 2012 with a main task of identifying and documenting a set of outstanding universal values (OUV) determined by the World Heritage Committee (WHC). Eight values attributed to the world heritage sites were identified and refined to suit the FRIM campus environment. FRIM OUV are categorised in terms of unique history, diverse historic landscape, rich tropical forest plantation legacy, unique botanic collection (related to significant on-going ecological and

Kavirasu Munian

FRIM is home to many species of reptiles including this black bearded flying lizard

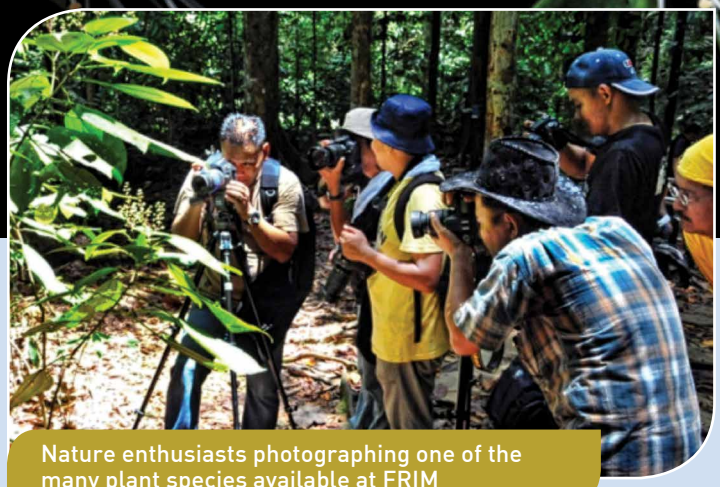
biological processes), position as one of the leading tropical forestry research, scientific research, ecotourism and educational roles, and green community roles.

To facilitate the Secretariat in monitoring of the activities, tasks are streamlined into four major work scopes comprising comprehensive documentation activities, green campus development, ground

More on page 8...

A flowering kekatong tree beside the Auditorium building, FRIM

Asmar Hassan



Yusni Idris

Nature enthusiasts photographing one of the many plant species available at FRIM

Yusni Idris

Former Prime Minister of Malaysia unveiling the Natural Heritage Site plaque

From page 7...

survey and inventory activities, and green community model establishment. FRIM personnel from all levels are being mobilised via the establishment of bureaus in charge of main components in FRIM i.e. infrastructure, research and commercialisation, biotic and abiotic aspects, ecotourism, and networking and community.

During the first year of operation i.e. at the end of 2012, activities conducted include ground mapping of FRIM area and boundaries which are determined on research plots or fields including the establishment of functional and buffer zones necessary for future core area management. The output gained was an accurate digital map of FRIM campus which was then followed by the tree inventory programme, popularly known among FRIM staff as the 'Road to UNESCO' Programme. The tree inventory exercise was conducted by FRIM with participation from among others, graduate students from Universiti Teknologi Mara, Shah Alam campus and Graduate Employability Management Scheme (GEMS) programme students. Twenty-four GEMS students will be taking part in the six-month Tree Inventory 'Road to UNESCO' Programme from 2 January to 30 June 2013.

Another programme called the FRIM Digital Project was also put on its course in 2013. Digital FRIM is an initiative to digitalise the entire information related to forestry for FRIM campus. Types of documentation work include those that are related to the campus's biodiversity richness such as lichens, mosses, ferns, fungi, monocots, dicots, fauna such as mammals, birds, reptiles, insect, including phenology and the green, low carbon campus development. The FRIM digital database forest will gather and record related information in a comprehensive manner for future use.

The FRIM WHS-UNESCO programme is slated to be completed in 2017. Look out for further developments in the next issues of FRIM in Focus. Information for this article is provided by the Secretariat of the FRIM WHS-UNESCO programme.

MALAYSIA TECHNOLOGY EXPO 2013

Forest Research Institute Malaysia (FRIM) won prizes for all of its entries at the Malaysia Technology Expo 2013 held from 21–23 February at Putra World Trade Centre, Kuala Lumpur. The list of entries is as follows:

- 'Non-starch Polysaccharide-rich Fraction of *Morinda citrifolia* (mengkudu) as a Glucose Lowering Agent', project headed by Dr Nik Musa'adah Mustapha won Gold Medal & Jury Award
- 'Corrugated Hybrid Palm Wood Veneer (C-HYPAWV)', project headed by Dr Abdul Hamid Saleh won Silver Medal
- 'Producing Pulp and Paper From The Malaysian Kenaf Stalk', project headed by Dr Rushdan Ibrahim won Silver Medal
- 'Gaharu Relaxation Indexer' project headed by Sahrim Lias won Silver Medal
- ''Anti-gout standardised extract (SEBF) from *Baeckea frutescens*', headed by Dr Fadzureena Jamaludin won Silver Medal
- 'Engineered Palm Wood Veneer (E-PAWV), project headed by Dr Abdul Hamid Saleh won Silver Medal

Puad Elham

The judging session during Malaysia Technology Expo 2013

MAULIDUR RASUL NATIONAL CELEBRATION 1434H/2013M

Yusni Idris

Head of FRIM Maulidur Rasul contingent receiving trophy from Minister of the Prime Minister's Department

The Birthday of Prophet Muhammad (saw) is celebrated yearly on 12 RabiulAwal. This year's celebration falls on 24 January and a national celebration was held at Putrajaya. It was indeed a sweet moment when Forest Research Institute Malaysia (FRIM) contingent was announced to receive the First Runner Up prize for the Statutory Body Category for its participation in the Maulidur Rasul procession.

DO GREEN SPACES EVOKE FEAR?

Sreetheran Maruthaveeran & Konijnendijk, CC

The link between green spaces and people has been studied extensively in various fields including environmental psychology, urban forestry and landscape architecture. Many of these studies deal with the positive impact of green spaces to the quality of life and well-being of people such as providing aesthetic experiences and recreational opportunities.

Green spaces are popularly associated with enhancing human health and well-being as well as providing opportunities for obtaining knowledge on nature and natural processes. While the benefits of green spaces are significant, these types of spaces may also evoke a sense of fear. Very few studies have examined these negative emotions, particularly the fear in urban green spaces.

Crime occurs when the victim is subjected to physical or sexual assaults, burglary and bullying. Since the 1960s fear of crime has been a subject of great interest for criminologists. On the other hand, fear is triggered by the perception of threat. A person feels fear of crime when he perceives a situation that is associated with crime.

Understanding fear of crime requires studying the stimuli that creates the fear, nevertheless studies conducted on urban green spaces are much less compared to in-built environments. Knowledge on the relationship between green spaces and human responses such as fear and crime in urban areas are well-documented in Western European and North American settings. Unfortunately, not much is known for the East, particularly the Asian region which has prompted a preliminary study by Forest Research Institute Malaysia and University of Copenhagen. At present, a conceptual framework for analysing fear of crime in urban green spaces has been established from related studies conducted globally.

Many urban green spaces also include facilities such as children's playground

What Evokes Fear of Crime in Urban Green Spaces?

Basically fear of crime is influenced by the human factor such as age, gender, ethnic minorities, personal experiences; and the surrounding environment such as presence of tramps, beggar, drug users, loitering individuals, vandalism, graffiti, garbage, abandoned cars or houses, as well as green spaces having poor design and poor maintenance.

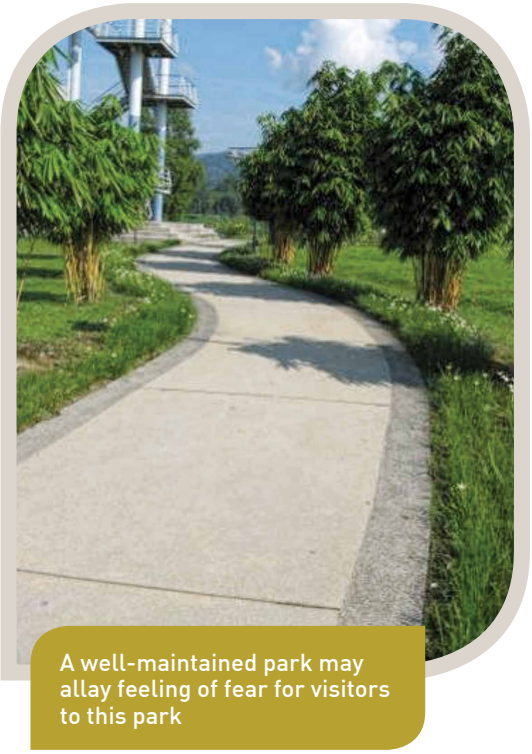
Ways of Reducing the Fear

The heightening sense of fear in urban green spaces can be tackled in many ways. Creating a sense of security and safety is an essential prerequisite of a successful urban green space because it may determine the behaviour of people.

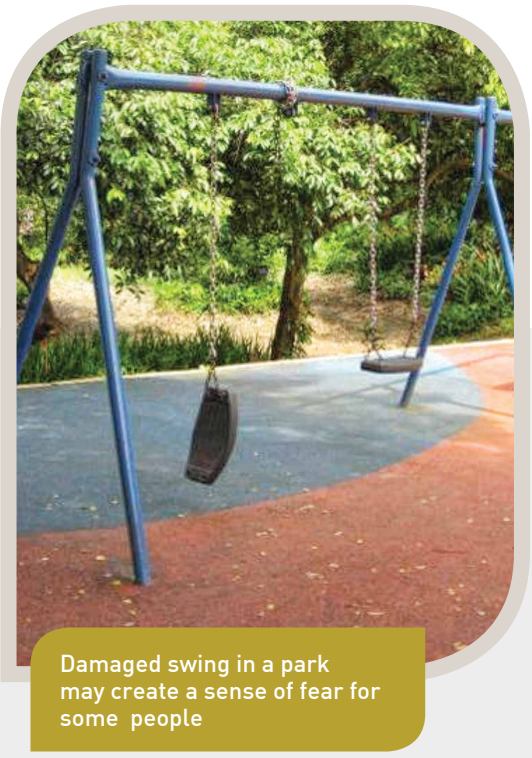
Proper maintenance of green spaces is one way of reducing fear as also proper species selection. Both factors are closely connected whereby a selection primarily based on aesthetic features might overlook the maintenance requirements thus unnecessarily increase the cost required.

A good planting design could also facilitate natural surveillance and also increase visibility and reduce concealment in urban green spaces. It could also

Some options of reducing fear of crime in green spaces



A well-maintained park may allay feeling of fear for visitors to this park



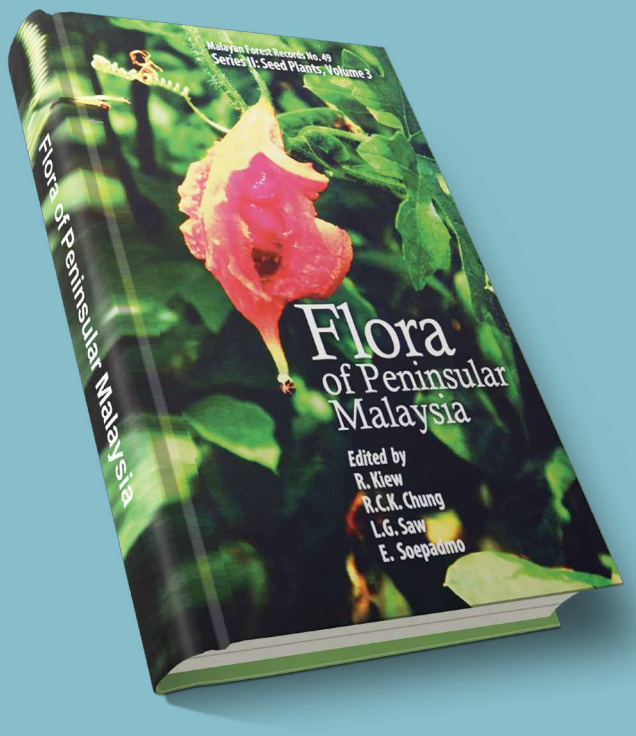
Damaged swing in a park may create a sense of fear for some people

provide more accessibility or escape routes when needed. The safety aspect is pertinent and should be addressed both by landscape architects and designer during the planning stage.

Improved lighting and their placement in the park on top of having security officers or wardens in green spaces are all enhancements of safety for the people. Entrances to parks could also play a role to create the sense of security in addition to activities conducted that appeal to the public.

ABOUT THE MAIN AUTHOR

Sreetheran Maruthaveeran is a Research Officer at the Urban Forestry Branch in FRIM. He conducts environmental behavioural studies on urban green spaces. He is also a Certified Arborist with the International Society of Arboriculture (ISA), USA. Currently he is pursuing his PhD studies at the University of Copenhagen, Denmark under Prof Dr Cecil C Konijnendijk on fear of crime in urban green spaces.



FLORA OF PENINSULAR MALAYSIA

SERIES II: SEED PLANTS, VOLUME 3

Malayan Forest Records No 49

Book Title
Flora of Peninsular Malaysia
Series II: Seed Plants, Volume 3
(Malayan Forest Records No 49)

Edited By
R Kiew, RCK Chung, LG Saw and
E Soepadmo

Publisher
Forest Research Institute Malaysia
(FRIM), 2012

Pages
385pp

ISBN
978 967 5221 73 6

Price
RM100.00 / USD75.00 (hardback)

http://www.chm.frim.gov.my/Resources/Publications/Books/Floras/Flora-of-Peninsular-Malaysia.aspx

This *Flora* sets a high standard. The lavish allocation of space to text (seemingly as much as required), illustrations and maps provide a refreshing approach to writing a regional *Flora*. This volume, the fourth to be published (in two series), covers ten families: Chrysobalanaceae, Cleomaceae, Cucurbitaceae, Cycadaceae, Juglandiaceae, Lecythidaceae, Magnoliaceae, Nepenthaceae, Ochnaceae, Olacaceae and 123 species. The species accounts take up 313 pages of the text, almost three pages per species! Note that figure and map numbers start afresh with each family treatment. A section of colour photographs illustrating a large cross-section of the species included adds an additional dimension to the volume. Detailed instructions for authors are found online (Web ref. 1) and these serve as useful instructions for preparing a detailed *Flora* treatment.

Starting with an introduction to plant conservation in Peninsular Malaysia, all species are assessed according to the IUCN guidelines at a local level. A considerable number of species have some degree of conservation concern in the region, largely due to clearing of habitat. With a flora estimated at 8500 species, Peninsular Malaysia is very floristically diverse. The plan for the series is to publish about

100 species per volume, so another 80 or so volumes can be expected in due course—an ambitious project that is off to a very fine start.

The *Flora of Peninsula Malaysia* follows on in style from the *The Tree Flora of Sabah and Sarawak* published between 1995 and 2007 by Soepadmo *et al* (a low resolution pdf version of these volumes is available for free online; Web ref. 2). The taxonomic accounts provide descriptions of the families, along with bibliographic details, vernacular names, distribution, uses and taxonomy. Dichotomous keys and full descriptions are presented from genera down to infra-specific taxa.

Introductions are given to families and genera, with space allocated to discussion of particular points of interest (phylogenetic history, ethnobotanical usage etc). The derivation of epithets is also provided (where known). For species, full citation details, relevant synonyms and type details are included. Diagnostic features are emphasised in the descriptions with italic text. Other than types, no specimens examined are listed, though the maps consist of specimen-based points.

Authors are from various countries around the world but examination of the species included in the treatment, both in the herbarium and in the field, is stipulated as a requirement for all contributions. This requirement for a fresh re-evaluation of taxonomic concepts has lead to the recognition of several new species in the course of preparing this volume, including a new species of *Cycas*, three new Lecythidaceae, a Cucurbitaceae and an Olacaceae. The case of *Cycas* is particularly noteworthy, as only four species occur in Peninsular Malaysia, with another of these only being named by Hill in 1999 (Hill & Yang 1999).

In several cases, multiple keys are provided to either flowering or fruiting material (*e.g.* Cucurbitaceae), which is very useful for such groups. In some cases, doubtfully recorded or questionably naturalised species are included in the keys but not discussed further in the text.

I found very few errors in the text, and none of consequence. Three lines of text have inadvertently been repeated on the following page in the introduction to Lecythidaceae (pp 173–4).

There are a number of recent nomenclatural changes adopted in this volume. The break-up of *Cleome L* is accepted but unfortunately, as with the *Flora of North America* and the *Flora of China*, the use of *Arivela* Raf overlooks the earlier name *Corynandra* Schrad ex Spreng. Further clarification of the application of the latter name is expected from Iltis and Cochrane in the near future. The inclusion of *Mukia* in an expanded *Cucumis* is not followed. While a larger number of genera have been recognised in Magnoliaceae in the region at various times in the past, an expanded circumscription is adopted here so that all species in the region are included under *Magnolia*. Looking afresh at the description and images of *Careya arborea*, the similarities to the northern Australian *Planchonia careya* are unmistakable, and perhaps foreshadows the possibility that ongoing studies of the generic relationships may result in an expansion of *Careya* to include *Planchonia*.

A number of the species in Peninsular Malaysia extend widely across Asia, including to northern Australia. These include *Maranthes corymbosa*, several species of *Cleome (s.l.)*, *Coccinia grandis*, *Luffa aegyptiaca*, *Barringtonia acutuangula*, *B. asiatica*, *Nepenthes mirabilis*, *Olax imbricata* and *Ximenia americana*.

I have been through the entire book several times in preparing this review and consider it a valuable addition to my library. It is a high quality publication, a thorough regional treatment, and makes a significant contribution to knowledge of the flora of the broader Malesia region.

Russell Barrett
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This review was published in the Australasian Systematic Botany Society Newsletter 152: 16-17. http://www.ambg.gov.au/asbs/newsletter.html

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Web ref. 1. *http://www.chm.frim.gov.my/Resources/Publications/Guides-for-Contribution.aspx* [Accessed 27 July 2012]

Web ref. 2. *http://www.chm.frim.gov.my/Resources/Publications/Books/Floras/Tree-Flora-of-Sabah-and-Sarawak.aspx* [Accessed 27 July 2012]

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TRADITIONAL KNOWLEDGE
WHO SHOULD PROVIDE PRIOR INFORMED CONSENT?

ISSUE

Tapping and documenting the traditional knowledge of indigenous people and local communities is a topic that has received increasing worldwide concern. Very often, researchers, agencies and companies gather information on forest-related knowledge without the consent of its holders. Although these knowledge holders are mostly willing to share, they will be losing out when products are commercialised without their knowledge.

PROBLEM/OPPORTUNITY

Prior to the Convention of Biological Diversity (CBD) which entered into force in 1993, the local communities were often ignored in efforts of conservation and utilisation of biological resources. No attention was given to issues such as community ownership as well as local traditional knowledge and utilisation of plant genetic resources. Because of globalisation, biodiversity resources were being privatised and ownership over these genetic resources are being encouraged. Large businesses of the developed countries fight over control of these limited resources and their associated knowledge. In the end, these traditional knowledge slips away from their original owners which are mainly the developing countries.

Parties of the CBD are responsible for the conservation of the biological diversity, sustainable use of its components as well as fair and equitable sharing of benefits from the utilisation of genetic resources. The access to resources, their sustainable use and fair equitable sharing of benefits are expected to be achieved via prior informed consent of the communities at the local level.

Who should provide the consent? This question was raised in the 'Database of Medicinal and Aromatic Plants of the Orang Asli in Peninsular Malaysia' project which was funded under the 9th Malaysia Plan (2006–2012) and the 10th Malaysia Plan (2011–2015). Through this government project, a few options on obtaining prior informed consent was obtained from 11 out of the 18 sub-ethnic groups of the Orang Asli community.

OPTIONS

Option 1 Since the Department of Orang Asli Development (JAKOA) is responsible for the welfare of the Orang Asli community, the department was initially proposed to represent the Orang Asli in extending their prior informed consent. JAKOA was initially established during the British colonial period, known as the Department of Aborigines in 1950 and supported by the Aboriginal Peoples Act, 1954. However, the Orang Asli community felt that it was inappropriate to elect JAKOA as a representative with regard to matters of traditional knowledge.

Option 2 The Village Safety and Development Committee was suggested to represent the Orang Asli. Members of this village committee are appointed by the government and hence its authority to grant prior informed consent on behalf of the Orang Asli community raised some doubts. Some felt that the village committee could not represent local voices.

Option 3 Indigenous non-government organisation (NGO) was suggested in view that some local communities such as the Semelai community at Tasek Bera wetlands, Pahang have their own NGO. The Semelai Association for Boating and Tourism (SABOT) was established in 1997 with assistance from the Wetlands International Malaysia following the declaration of Tasek Bera as a wetland of international importance under the Ramsar Convention on Wetlands. The Convention disallows economic activities at the lake such as commercial hunting and fishing. As such, SABOT's role is to promote ecotourism as an economic alternative. SABOT was found to be unsuitable in representing the Semelai community as it is being organised based on membership. Members have to pay annual dues and are subjected to 10% fees on their earnings from guiding, transporting and accommodating tourism activities.

Option 4 The suggestion to obtain prior informed consent from all villagers in the local community was posed. This is a perfect arrangement as it takes into consideration the views of all members in the

Interview session with a Lanoh community member at the Kg Air Bah, Lawen, Gerik, Perak

The indigenous people giving support to FRIM's research

village. But it might be difficult to implement as Orang Asli are generally mobile. Obtaining consent from each member of the household would be time consuming and costly as some villagers may be away for a long period of time. Moreover, getting views from young children may prove to be a challenge. As such, this suggestion was not practical, taking into consideration time and financial constraints.

Option 5 Getting households to grant prior informed consent could provide another solution. The target household member is the head or the spouse who may represent the voice of the members. Household heads or their spouses in a village could be regarded as representative for the members. Even if the household head is not present, the spouse is mature enough to understand the issue and to make decisions.

CONCLUSION

The Malaysian traditional knowledge project implemented by FRIM involved lengthy discussions at both community and ministerial levels. It was found that the option of obtaining prior informed consent from traditional knowledge owners at the household level is most practical and effective. Before obtaining their consent however, the research team held awareness workshops with 11 Orang Asli sub-ethnic groups. A total of 1152 households from 11 communities and 540 (47%) adult members attended the awareness workshops. Participants of these workshops later relayed the importance of traditional knowledge and the need to obtain consent to other villagers in addition to JAKOA members at the settlement level and local leaders also explained the project to the residents. During the 2008—2012 period, up to 84% of households in 11 villages granted consent to the research team to implement further traditional knowledge projects.

FURTHER INFORMATION PLEASE CONTACT:

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Research, development and its applications at Forest Research Institute Malaysia (FRIM) emphasise the sustainable management and optimal use of forest resources. Generating knowledge and technology for the industries requires FRIM's research to be diverse and complex. Nevertheless, FRIM's leadership is recognised in the basic documentation of forest resources. Substantial literature on the forest is presently available and this illustrates the extent of FRIM's work whereby Malaysia is the first developing nation to successfully document its tree flora. It is only through documentation that the managers of forests and the users of these resources can maximise the management and utilisation of the nation's heritage. Simultaneously, FRIM conducts work on determination of wood properties as well as wood preservation techniques for various commercial timber species in the country. This information provides the foundation for a growing timber industry.

Future scenario on forestry is expected to be substantially different in addition to being highly unpredictable. In planning for the future, it is essential for FRIM to construct a plausible picture based on calculated projections and in-depth analysis. Strategic and action plans will also assist to guide the organisation on manpower development issues as well as facilitate its focus pertaining to biotechnology and multiple usage of forest resources. Special emphasis is also on the aspects of biodiversity and management of natural forest. The long-term strategy is fundamental to establish a strong foundation for FRIM's future research programmes.

Timber products developed by FRIM Technologies as seen in an international exhibition

Discovering the sight and sound of the forest environment

Forestry sector contributes substantially to the socioeconomic development of the nation. In order to sustain, future development of R&D has to be integrated and synchronised in line with the changing external environment. R&D findings should continue to be incorporated at the ground level and in the industry. Consolidated efforts should also be geared towards facilitating forest related industries in implementing good practices. When good practices are adopted, the usefulness of scientific findings will be apparent. FRIM in this respect will strive to maintain excellence in R&D activities thus continue to lead the tropical forestry research internationally.

ABOUT THE AUTHOR

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