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NOTES ON A TRIP IN PENINSULAR SIAM*

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The most abundant and characteristic forest trees of the Malay Peninsula are the soft wooded species of *Shorea*, known as Meranti or Seraya. Valuation surveys have shown them to represent some 28% of the volume and more than 17% of the trees of commercial size in our forests. Such forms are absent or but scantily developed in India and Burma and in Northern Siam. It was desired to determine the limits of northern distribution of the type of forests where these form predominate, and to see if there was any indication of the reasons for their restriction to their present area.

The Botanical Section in Siam has, since 1921, made extensive collections in various parts of the country and the Director, Dr. *A.F.G. Kerr*, was asked to advise as to where this study could best be undertaken. He very kindly suggested an itinerary which would give ready access to parts of Peninsular Siam where Dipterocarps are known to occur. This itinerary was adopted and the aid of the Royal Siamese Forest Department was sought. A senior forest officer was detailed to accompany me in my trips in each forest district and these forest officers acted as interpreters and made the arrangements for labour and transportation. This was of the greatest assistance and made it possible to get over far more territory and accomplish much more than would otherwise have been possible.

The trip started on June 1 and the field work was finished on July 7. I took with me from this country *Kiah bin Haji Salleh*, a plant collector from the Botanic Gardens, Singapore, and Forest Ranger II, *Abdul Hamid*

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** Dr. F.W. Foxworthy (1877–1962), an American scientist served as the Research and Planting Officer at the Forest Research Institute, Kepong, Malaysia during 1918-1932.

bin Mohd. Sah. Herbarium collections were made for our own use and for distribution to the herbaria at Bangkok, Singapore, and Kew. These collections amounted to some 250 numbers.

Work was done at the following places

Place	Circle	Approx. Lat.	Date
Bukit	Pattani	6° 11′	June 0–9
Bacho	,,	6° 26′	,, 9–12
Banang Sta	,,	6° 17′	,, 12–16
Kampengpet	Nakawn Sri Tamarat	6° 30′	,, 19–23
Chawng	,, ,, ,,	7° 35′	,, 23–26
Huey Mut	,, ,, ,,	8° 30′	,, 28–30
Bandon	Surat	8° 50′	July 1– 5
Hua Hin	Rachaburi	12° 30′	,, 6– 7

FORESTS IN THE PATTANI CIRCLE

A good deal of the original lowland forest has been destroyed and the land is now settled. This is particularly true at Bukit and Bacho, where land is cultivated to the foot of the ridges and, in some places, on the lower slopes.

Bukit. This was our first location and we found the composition of the forest very much like that of the forests further south in the Peninsula. It was noteworthy that two common Malayan forms, Petaling (*Ochanostachys amentacea*) and Bertam (*Eugeissonia tristis*) were absent. The lower part of the ridge showed a good deal of sandy, light-coloured soil and numerous granite boulders. From about 400 to 900 ft. there was a belt of red laterite. Above this the soil was more yellowish and sandy and had a good many granite outcrops. The best of the forest was in this upper part. Some trees of a form of Balau (*Shorea materialis?*), very like the Damar Laut Kuning of Kinta, were found at an elevation of 500–600 ft. They were being worked for sleepers which are sent to Kelantan. These were very fine trees and the wood seemed to be of excellent quality. A form of Mersawa (*Anisoptera* sp.), very like our *A. thurifera*, was common at about the same elevation.

Keledang[1] (*Artocarpus lanceaefolia*) was of frequent occurrence on steep slopes at various elevations.

Chengal[2] (*Balanocarpus heimii*) was common on the upper part of the ridge and most of the large trees had been tapped for damar. The tapping was badly done, but none of it was recent. It is said that a good deal of Chengal was cut and used for sleepers when the railway was being built. We saw a few recently felled trees. There was a fair amount of natural regeneration and a number of small trees were seen. Seraya[3] (*Shorea curtisii*) was the commonest big tree on parts of the top of the ridge. There was very little regeneration.

Meranti Tembaga[4] (*Shorea leprosula*) occurred and there was a fair amount of regeneration.

Other familiar forms found were :– Tualang[5] (*Koompassia parvifolia*), Kulim (*Scorodocarpus borneensis*), Dedali (*Strombosia javanica*), Meraga (*Adina rubescens*), Sepetir (*Sindora* sp.), Merbau[6] (*Intsia bakeri*), Kelat (*Eugenia* spp.); Terentang[7] (*Campnosperma* sp.), and Medang (Various Lauraceae). A number of Keruing trees were found on the upper part of the ridge. They were not in flower and fruit, but seemed to be *Dipterocarpus costatus*.

One of the commonest herbaceous forms on the floor of forest on top of the ridge was *Susum malayanum*,[8] which had not; I think, previously been reported from so far north.

Bacho. The forest here was on rather steeper ridges. Many of the same species were present as at Bukit, but there was less natural regeneration of Chengal and Meranti and the quality of the forest was not quite so good. There had also been timber work here and we were told that some of the Chengal had been used for sleepers. A Dipterocarp species unknown to me was of common occurrence here and was said to furnish a good timber known as Keruing.

Banang Sta. The forest near here was on gently undulating land and resembled very closely some of the forests in Upper Perak. There was no Chengal.

1. Khanun pan; 2. Takhian chan tamaeo; 3. Saya daeng; 4. Saya khao; 5. Yuan 6. Lumpho; 7. Langtang or Nang pron; 8. Kong.

Malayan forms noted here that had not been recorded at Bukit or Bacho were:— Meranti Sarang Punai[9] (*Shorea parvifolia*), Melantai[10] (*Shorea macroptera*), Kempas[11] (*Koompassia malaccensis*), Jelutong (*Dyera* sp.), and Perah[12] (*Elateriospermum tapos*). Most of the Keruing here seemed to be of the species *Dipterocarpus kerrii*.[13] The forest was of better quality than that seen at the two preceding places. Meranti and Bungor were being worked by Chinese coolies.

The train north was taken from Yala and it was possible to see a good deal of Seraya on the hills near the line. Such forest was not seen north of the station of Koke Po (Koke Bodhi according to the railway signs).

The forests of Pattani are predominantly Malayan in character. Malayan species which seem not to be found north of this circle are:—

Meranti Tembaga (*Shorea leprosula*).
Meranti Sarang Punai (*Shorea parvifolia*)
Melantai (*Shorea macroptera*)
Balau (*Shorea materialis*?)
Meraga (*Adina rubescens*)
Terentang (*Campnosperma* sp.)
Kulim (*Scorodocarpus borneensis*)
Susum molayanum.
Seraya (*Shorea curtisii*)
Chengal (*Balanocarpus heimii*)
Keledang (*Artocarpus lanceaefolia*)
Tualang (*Koompassia parvifolia*)
Dedali (*Strombosia javanica*)

FORESTS NORTH OF PATTANI.

Kampengpet. There is a well-forested hilly region from 28 to about 50 km. west of the station of Kuan Nieng. Our camp was at 34½ km. and I have used the name Kampengpet, because that was the nearest town. There are both granite and limestone hills, but most of the commercial trees are on the granite soil. None of the Merantis found in Pattani were found, but a form very much like Temak (*Shorea crassifolia*) was not uncommon. This same form, or one very like it, is found as far north as Huey Mut. A number of Dipterocarps were found, but most of them were of species that are not known from the Malayan region. One form of *Hopea*, known as Chengal Batu or Takien hin, occurs on steep limestone ridges. The wood is a good deal like that of Chengal and is cut for the Penang market.

9. Phayom nokkhao; 10. Chan hoi; 11. Thong bung; 12. Pra; 13. Yang manmu.

Jelutong is said to occur some miles north of this place, but we did not see it.

Sepetir and Merbau were quite common. The undergrowth was not quite so dense as in Pattani and there was less of natural regeneration.

Chawng. This place is west of the divide, at the foot of some granite hills that carry good forest.

Parashorea stellata[14] was here found in fruit.

Penaga (*Mesua ferrea*)[15] was found of rather larger size than is common for it in the F.M.S.

Forms of Rengas and Nyatoh were common.

Kempas (*Koompassia malaccensis*) was found in stream valleys. This is the farthest north that it has been found. Undergrowth was not very dense.

Huey Mut. The soil here is very sandy and there are practically no streams. The local people get their water supply from wells. Form of Yang (*Dipterocarpus* spp.) are the commonest trees, but other Dipterocarps are found, one of them being very like Temak (*Shorea crassifolia*). Undergrowth not particularly dense.

The cleared country hereabout has been occupied by the weed *Eupatorium odoratum*,[16] which is said to be of comparatively recent introduction. It covers the ground thickly, kills out laland, and grows to a height of 8–10 feet. The date of introduction of this weed to the east is uncertain, but the first record for it that I have found is in the Flora of British India. *J.D. Hooker* says of it (1881), "a West Indian species, cultivated, but very rarely, in India". In 1920 it was shown to me in Burma, where it was said to be a serious pest in teak forest, smothering regeneration. In 1922, Dr. *A.F.G. Kerr*, Chief of the Botanical Section in Siam, writing, of a part of Siam in the neighbourhood of 17° N. Lat. said, "Within the last 15 or 20 years a new factor has come into play that may act very deleteriously on the forests; that is the introduction of the American weed–*Eupatorium odoratum*, which now speedily takes possession of most clearings, choking out all other growth, and remaining indefinitely. It is to be hoped that some use will be

14. Khai khieo; 15. Bunnak or Nakbut 16. Sapsua;

discovered for this weed, which is at present an unmitigated pest". What seems to be this same species has been found within the year in three of our forest reserves in Perak. It is hoped that it will not prove to be a serious pest in the Peninsula.

Bandon. Forms of Yang (*Dipterocarpus* spp.) and Kiam[17] (*Cotylelobium lanceolatum*) are the most important trees, the wood of the latter being extensively used for sleepers and heavy construction. The East Asiatic Company Limited has a saw mill at Bandon and cuts principally Yang (*Dipterocarpus* spp.), the wood of which is extensively used for temporary construction in Bangkok. It seems that Yang occupies the place in that market that Meranti does here. There was formerly some import of Meranti and Seraya into Bangkok, where they were known as "Singapore wood" and were not highly regarded.

Visited one cut over area and found a good deal of regeneration of Yang and Kiam except where *Eupatorium odoratum* had come in thickly.

Hua Hin. There is a very poor forest on the granite hills west of the railway. The forest is very open and there is grass between the trees. This is said to represent the first appearance of the open deciduous forest, which is found through out a large part of Siam. The one tree of special interest to me here was *Pentacme malayana*[18]. This shows great ability to recover after repeated injuries, principally by fire. It often shows several small stems in a plant only a foot or two in height. There is the same woody mass developed for some inches below ground level as we have found in plants of this species that we have planted in our experimental plantations. It seems that this is an adaptation to enable the plant to recover from repeated injuries. It would be interesting to know if it is possible for the plant to make uninterrupted height growth when planted under favourable conditions.

After arrival at Bangkok, the collections of the Botanical Section were studied. These collections contain quite a little unidentified material, some of it seeming to represent undescribed Siamese species. As might be expected, the region of tropical rain forests in the Peninsula has a particularly large representation of Dipterocarp species.

17. Khiam; 18. Rang, *Pentacme malayana* is now treated as a synonym of *Shorea siamensis*.

As regards the reasons for the non-occurrence north of Pattani of the most characteristic Malayan species BODEN-KLOSS [Journ. Str. Br. R. As. Soc. 59 (1911) 27-234] says what the boundary between the Malayan and Siamese floras seems to be along a line from a little north of Alor Star to a point slightly further north on the east coast. RIDLEY [Journ. F.M.S. Museum K. (1920) 65-126] discusses this matter. He says that geological investigations indicate that this boundary was the coast line of what was once an island but has since become the southern part of the Malay Peninsula, and states his belief that in addittion to the line indicated there may be one or more transition lines further north. My time was too short and our collections too scanty to enable me to arrive at final and detailed conclusions; but my observations of prominent commercial trees indicate that the forests of Pattani are definitely Malayan in composition and that there is a rather marked break along the Alor Star–Singgora line, with other transition areas further north.

The geological history doubtless has something to do with this and it is probable that the climate, amount and distribution of rainfall are also influential. The seasons are much more sharply marked north of Pattani and the total rainfall is said to diminish from about 100 inches in Pattani to as low as 50 inches at Bangkok.

The forests of Peninsular Siam have received comparatively little attention until recent years; because the teak forests of northern Siam were so important and such a ready source of revenue. The building of the railway through Peninsular Siam probably did a good deal to bring attention to its forests, because it was necessary to seek local timbers for sleepers and other work. The region is now being developed and constitutes one forest administrative circle with a Conservator and five senior forest officers. It will probably take some time and a good deal of collecting to get a complete knowledge of the commercial trees of the region.

It may be of interest to note in passing that Siam is now experiencing a business depression as are many other countries, and the timber market is not in a lively state.

On the return from Siam, a week was spent on the Langkawi Islands and Malut, Lintah Bukit, and Meranti Jerit were studied. Malut was in full flower and was very conspicuous. It shows a very large amount of natural regeneration and the young seedlings are conspicuous by reason of their very long-acuminate leaves. This species is *Hopea anomala*[19]. Lintah Bukit is a species of *Hopea* apparently very closely related to *Hopea dealbata*[20] of Indo China. It shows a fair amount of natural reproduction and the seedlings seem to be able to recover from repeated injuries. Meranti Jerit is a species of *Shorea*, which produces a good red wood. The tree is found on rocky ridges and very few seedlings were seen. This species has not yet been found in flower. The forests of Langkawi seem to be more closely related to those of Peninsular Siam a short distance north of Pattani than to the forests of the more southerly part of the Peninsula.

19. *Vatica pauciflora* (Korth.) Bl., Sak tha-le.; 20. *Hopea helferi* (Dyer) Brand is., Krabok krang.