DISTRIBUTION, CONSERVATION STATUS AND THREATS TO *ERYCIBE* SPECIES (CONVOLVULACEAE) IN PENINSULAR MALAYSIA

S Syahida-Emiza[1, 2, *], R Kiew[1], NW Haron[2] & G Staples[3]

[1]*Forest Research Institute Malaysia, 52109 Kepong, Selangor Darul Ehsan, Malaysia*
[2]*Institute of Biological Sciences, Faculty of Science, Universiti Malaya, 50603 Kuala Lumpur, Malaysia*
[3]*Singapore Botanic Gardens, 1 Cluny Road, Singapore 259569*

Received March 2012

SYAHIDA-EMIZA S, KIEW R, HARON NW & STAPLES G. 2013. Distribution, conservation status and threats to *Erycibe* species (Convolvulaceae) in Peninsular Malaysia. Information on the distribution and conservation status of *Erycibe* species in Peninsular Malaysia is important for the management and conservation plan of these threatened taxa. There are 19 *Erycibe* taxa in Peninsular Malaysia. Currently, 17 taxa have scientific names but 2 are new and labelled as *Erycibe* sp. A and *Erycibe* sp. B. In this study, the two new taxa are not evaluated. The conservation assessment followed the guidelines and criteria of the Malaysia Plant Red List. Based on information from the taxon data information sheet, nine taxa are categorised as Least Concern, one as Near Threatened, two as Vulnerable, two as Endangered, one as Critically Endangered, two as Data Deficient and none are Extinct. Taxa categorised as Critically Endangered, Endangered and Vulnerable are considered threatened. Of the five threatened taxa, two are endemic to Peninsular Malaysia, namely, *E. praecipua* ssp. *praecipua* and *E. sapotacea*. Distribution map for each taxon is also provided.

Keywords: Conservation management, distribution map, liana, Malaysia Plant Red List, threatened taxa

SYAHIDA-EMIZA S, KIEW R, HARON NW & STAPLES G. 2013. Taburan, status pemuliharaan serta ancaman terhadap spesies *Erycibe* (Convolvulaceae) di Semenanjung Malaysia. Maklumat tentang taburan dan status pemuliharaan spesies *Erycibe* di Semenanjung Malaysia penting untuk rancangan pengurusan dan pemuliharaan takson terancam ini. Terdapat 19 takson *Erycibe* di Semenanjung Malaysia. Sekarang, 17 takson mempunyai nama saintifik yang sah namun dua adalah baharu dan dikenali sebagai *Erycibe* sp. A dan *Erycibe* sp. B. Dalam kajian ini, dua takson baharu tersebut tidak dinilai. Penilaian pemuliharaan dijalankan mengikut garis panduan dan kriteria Malaysia Plant Red List. Berdasarkan lembaran maklumat data takson, sembilan takson dikategorikan sebagai Least Concern, satu sebagai Near Threatened, dua Vulnerable, dua Endangered, satu Critically Endangered, dua Data Deficient dan tiada sebagai Extinct. Takson dalam kategori Critically Endangered, Endangered dan Vulnerable merujuk kepada spesies yang terancam. Daripada lima takson yang dikategorikan sebagai terancam, dua adalah endemik di Semenanjung Malaysia iaitu *E. praecipua* ssp. *praecipua* dan *E. sapotacea*. Peta taburan bagi setiap takson juga disediakan.

INTRODUCTION

The genus *Erycibe* from the family Convolvulaceae is represented by approximately 75 species (Staples 2010). Many *Erycibe* species have light sweetly scented flowers like jasmine and can be recognised by the absence of style, bifid corolla lobes, very dense hairs (usually brown colour) on mid-petaline bands and berry fruits which are seated on persistent calyx. They are found at forest margins, forest gaps, near roadsides and sometimes in dense forest on top of canopy trees. *Erycibe* is distributed mainly in tropical Asia and Malesia with outlying species in Australia, Japan and Taiwan (Staples 2010). *Erycibe* grows as lianas or climbers, although some are shrubs or rarely trees. Of the total of 75 species, 19 taxa are found in Peninsular Malaysia.

Although the taxonomy of *Erycibe* species is known and their biogeographical distributions have been recorded for the Malesian (Hoogland 1953a, b) and Malayan (Ng 1989) regions, there is lack of overall knowledge concerning their conservation status. The aims of this paper are to present the distribution of *Erycibe* species in Peninsular Malaysia with precise distribution

**syahida@frim.gov.my*

maps and to assess the conservation status of a particular species by following the guidelines and criteria proposed in the Malaysia Plant Red List (Chua & Saw 2006).

MATERIALS AND METHODS

This study was based on herbarium and type specimens from the Bangkok Forest Herbarium, herbarium of the Royal Botanic Gardens Kew, Kepong Herbarium, herbarium of Universiti Malaya, Nationaal Herbarium Nederland, herbarium of Singapore Botanic Gardens and herbarium of Universiti Kebangsaan Malaysia. To produce the distribution map of each taxon, data on localities were entered into the Botanical Research and Herbarium Management System (BRAHMS) database software. More than 170 herbarium specimens of *Erycibe* species from Peninsular Malaysia were examined. Precise longitudinal and latitudinal coordinates of the locality for each specimen are essential to ensure accurate plotting of distribution maps. For historical and old specimens lacking information on longitude and latitude, published papers of collectors were used as references to determine the location of specimens. These data were entered in the Rapid Data Entry (RDE) file and saved as dbf format, which could be used and read using ArcView GIS 3.2a software.

To assess the conservation status for each taxon, three values were considered: extent of occurrence, area of occupancy and percentage of forest cover. An additional map was prepared using the same software (ArcView GIS 3.2a). Extent of occurrence, area of occupancy and percentage of forest cover were calculated from the map produced. The values for extent of occurrence and area of occupancy were generated using the Conservation Assessment ToolS (CATS), a software produced by the Royal Botanic Gardens Kew, United Kingdom. The calculation for the extent of occurrence followed the IUCN Red List guidelines. A grid scale of 2 km × 2 km (a cell area of 4 km^2) is suitable and has been used to estimate area of occupancy value (Anonymous 2011). Forest cover generated by the Third National Forest Inventory was used to estimate the percentage area under forest cover. Status of habitats, current threats and current conservation measures for the majority of taxa were ground-truthed.

Conservation status of each taxon was assessed and a threat category given by filling in the taxon data information sheet (electronic copy available at http://www.chm.frim.gov.my) based on guidelines and criteria of the Malaysia Plant Red List (Chua & Saw 2006). The most commonly used criteria for assessing *Erycibe* species were geographic range, demographic details of population, protection status and population decline. Data were based from the literature, herbarium specimens and two years of field work from 2009 till 2010. The criterion specifies nine categories: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD) and Not Evaluated (NE). Under the Red List Category and Criteria Assessment, taxon categorised as CR, EN and VU are collectively referred as threatened and require supporting documents or reasons to qualify the categories. There are five criteria used to determine whether a taxon belongs to a threatened category, i.e. population reduction, geographic range in the form of extent of occurrence or area of occupancy, small population size and decline, very small and restricted population, and quantitative analysis (electronic copy available at http://www.iucn.org). The assessment was evaluated by the Secretariat of the Threat Assessment Project Flora of Peninsular Malaysia/National Assessor undertaken by the Forest Research Institute Malaysia.

RESULTS AND DISCUSSION

Endemism

Peninsular Malaysia has 19 recognised taxa of *Erycibe* of which four are endemic, namely, *E. magnifica*, *E. praecipua* ssp. *praecipua*, *E. sapotacea* and *E. strigosa*. *Erycibe magnifica* and *E. strigosa* are present only in Perak, *E. sapotacea* only in Penang Hill and Government Hill and *E. praecipua* ssp. *praecipua* in Penang, Perak and Johore. Collections of the endemic taxa are poor and represented only by few taxa, i.e. two collections for *E. magnifica*, one for *E. strigosa*, three for *E. sapotacea* and four for *E. praecipua* ssp. *praecipua*.

Distribution and conservation status

Distribution maps for the 17 taxa are given in Appendices 1–17. Perak has the highest number of taxa collections. To date, 11 species have been recorded from Perak from which three taxa are

endemic to Peninsular Malaysia (*Erycibe magnifica*, *E. strigosa* and *E. praecipua* ssp. *praecipua*). Nearly 20 collections of five *Erycibe* species were made in Penang especially on Penang Hill (Appendices 3, 6, 10, 11 and 13). Penang Hill is scientifically important as a type site of many Malaysian plant species including three *Erycibe* species, namely, *E. malaccensis*, *E. praecipua* ssp. *praecipua* and *E. sapotacea*. *Erycibe grifithii* also occurs on Penang Hill. Penang Hill is a hill resort comprising several peaks—Western Hill, Bukit Laksamana, Tiger Hill, Flagstaff Hill (the most developed peak) and Government Hill. Many *Erycibe* species grow in the non-protected areas of Penang Hill such as roadsides or on private lands, some of which are so rare that their existence is endangered. Thus, clearing land for development is always a conflict-related land issue, i.e. to build public facilities or maintain the climbers.

Table 1 is a summary of the conservation status of 19 taxa of *Erycibe* in Peninsular Malaysia. None of the Peninsular Malaysian species are categorised as EX. Nine taxa are categorised as LC, one as NT, two as VU, two as EN, one as CR and two as DD. As the two new taxa (*Erycibe* sp. A and *Erycibe* sp. B) are not published yet, they are not evaluated and categorised as NE. All nine taxa categorised as LC are widely distributed in Peninsular Malaysia and can be found in the network of Totally Protected Area (Appendices 1, 2, 3, 6, 9, 10, 12, 14 and 17). Moreover, there are no major threats identified to their habitats and populations.

Taxa categorised as Critically Endangered, Endangered and Vulnerable are considered threatened. Of the five threatened taxa, two are endemic to Peninsular Malaysia, namely *E. praecipua* ssp. *praecipua* (only found in Johore, Penang and Perak) and *E. sapotacea* (only found in Penang).

Erycibe tomentosa var. *hirsuta* is the only taxon categorised as CR. This climber grows at low altitudes in swampy areas and is known only from a single locality, i.e. Sungai Kayu, Kota Tinggi, Johore, which is outside the network of Totally Protected Areas (Appendix 16). The

Table 1 Conservation status of *Erycibe* species in Peninsular Malaysia

Species	No. of localities	IUCN category						
		CR	EN	VU	NT	LC	DD	NE
Erycibe aenea	11					√		
Erycibe albida	30					√		
Erycibe citriniflora	7					√		
Erycibe expansa	3				√			
Erycibe festiva	2		√					
Erycibe griffithii	14					√		
Erycibe leucoxyloides	4			√				
Erycibe magnifica	2						√	
Erycibe maingayi	5					√		
Erycibe malaccensis	12					√		
Erycibe praecipua ssp. *praecipua*	3			√				
Erycibe rheedii	14					√		
Erycibe sapotacea	1		√					
Erycibe stapfiana	9					√		
Erycibe strigosa	1						√	
Erycibe tomentosa var. hirsuta	1	√						
Erycibe tomentosa var. tomentosa	10					√		
Erycibe sp. A	1							√
Erycibe sp. B	6							√

CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern, DD = Data Deficient and NE = Not Evaluated

assessment recognised two threats to the species habitat. First, a large area of Sungai Kayu is being developed for small-scale agroforestry or oil palm plantations. Second, the area has also been infrastructurally developed for human settlement and land transportation. The species was last collected in 1952. Since only one locality is known the species has a high risk of extinction in the wild. Further study of the habitat status, population range, size and viability of this species is needed.

Erycibe festiva and *E. sapotacea* are categorised as EN. *Erycibe festiva* is very rare and known only from two localities from Larut and Kuala Dipang Forest Reserve, Perak (Appendix 5). Infrastructure development for human settlements in Larut and Kuala Dipang has been observed as major threats to the species. Although *E. festiva* is found in forest reserves, its habitat information is not sufficient to confirm whether it occurs in protected areas. There are neither ecological nor population data available from the two collections, and the last collection was made in 1976. Hence, field study within the population range and habitat status are needed for the areas from where the species was collected. *Erycibe sapotacea* is considered as EN because its population is estimated to have declined on Penang Hill; moreover the distribution is narrowly endemic to Penang Hill (Appendix 13). Rapid development of infrastructures, including roads and bungalows, are still going on at Penang Hill especially on Flagstaff Hill area. To date, these activities are still threatening the habitat of *E. sapotacea*. However, the species also occurs on Government Hill (northern part of Penang Hill), which is in a protected water catchment area.

The two taxa categorised as VU, *E. leucoxyloides* and *E. praecipua* ssp. *praecipua,* are facing similar threats because their populations are reducing. The population of *E. leucoxyloides* is only known from four localities, none of which is in a protected area (Appendix 7). Population reduction has been estimated in Johor Bahru and Batu Caves where the causes of reduction may not have ceased or may not be reversible due to rapid development for human settlements and towns. Although quarrying activities in Batu Caves have ceased, infrastructure development for human settlements surrounding the area is responsible for the declining habitat quality. *Erycibe leucoxyloides* was collected from Singapore in 2005 but the last collection from Peninsular Malaysia was in 1930. From the little information obtained from the specimen labels, it is believed that the species occured near roadsides or very open areas as collections were from Kuala Lumpur, Batu Caves, Johor Bahru and Mawai Road in Kota Tinggi. *Erycibe praecipua* ssp. *praecipua* is also categorised as VU because its population is decreasing. This species also occurs in Kledang Saiong Forest Reserve, Perak and probably occurs in a secondary forest in Mawai, Johore where the last collection was made in 1934 (Appendix 11).

Erycibe expansa is found only at three localities and confined to a single state, i.e. Kedah, including Langkawi Island. On the mainland, collection was made at Kampung Naka in 1933 (Appendix 4). However, on the island, the species is also found in Pekan Kuah. The infrastructure development for human settlements, and tourism and recreation in Langkawi Island are major threats to the habitat of this species. The species was last collected from Langkawi Island in 1911. Its habitat has decreased due to the development in Pekan Kuah. Therefore, based on guidelines and criteria proposed in the Malaysia Plant Red List (Chua & Saw 2006), *E. expansa* is categorised as NT.

Erycibe magnifica and *E. strigosa* are endemic species categorised as DD following confined information available and both species are present in Perak. *Erycibe magnifica* is very rare and found only in two localities from Larut and Matang in Perak (Appendix 8). Very little information on the habitat, ecological and population is available on old herbarium specimens, last collected in 1883. Therefore, the status of the species cannot be assessed. Similarly, *E. strigosa* is only known from a single locality in Taiping, Perak (Appendix 15). Information on the habitat and population from this single locality is very limited and no ecological and population data are available. Research on the habitat and population range of the species is required.

Erycibe sp. A is present at Gunung Belumut, Johore and it is located within a forest reserve which has conservation protection. *Erycibe* sp. B is found at lowland forests in Pahang, Selangor and Negeri Sembilan, including Pasoh Forest Reserve, which is a research forest and relatively undisturbed. Due to limited information on their

localities, ecology and population data, these species were not evaluated.

In general, the main threat to all threatened taxa is landuse changes caused by development of towns or human settlements or plantations. At present, the increasing changes in landuse and conversion to plantations, agriculture lands and urbanisation are critically contributing to the biodiversity erosion that may also directly affect species extinction. In 1960, 70% of Peninsular Malaysia was under natural forest cover but by 2002, it had declined to 40.7% (Anonymous 2008). For example, in the western coast of Peninsular Malaysia, there are some pockets of forested area such as Kanching Forest Reserve and Ampang Forest Reserve, where their surrounding areas are rapidly being developed. These few remaining pockets of forest areas are facing tremendous pressure and threats. The state government who has the authority on state lands is responsible for maintaining these areas as forest area. It is vital to ensure that all remaining forest areas be protected to avoid further development.

The establishment of protected and conservation areas has greater potential in preventing loss of threatened species and also conserve habitats of flora and fauna. This suggests that more protected areas should be established such as permanent forest reserves, especially where threatened species occur, e.g. in Penang Hill, Larut and Batu Caves. In addition, forest edges and forest margins are natural habitats to most *Erycibe* species. These areas are always overlooked when in fact many species grow here. Thus, federal and state governments need to monitor and maintain these protected areas including the buffer zones of forested vegetation which are usually the habitat of many species especially secondary species and lianas.

There is a need to put extra efforts in saving and protecting threatened species. In cases where threatened species occur in the non-protected areas e.g. Penang Hill, seedlings should be taken and the plants replanted at ex-situ sites. In order to ensure success of ex-situ programmes, it is recommended that future study of *Erycibe* species include research on natural habitat, species behaviour, soil structure where the species occur and many more ecological aspects. Regular monitoring is required to study the phenology and population trend of this species.

Although *Erycibe* species have less economic importance and uses, the number of *Erycibe* taxa contributes to the richness of flora in Peninsular Malaysia. Therefore, it is very important to conserve them before they become extinct. In future, when more information is available, re-evaluation is necessary and the conservation status of some taxa may be upgraded or downgraded.

ACKNOWLEDGEMENTS

The authors acknowledge funds received from the Forest Research Institute Malaysia (Research and Pre-commercialisation grant, GPP-TFBC-1208-001), Ministry of Science, Technology and Innovation (Flora of Peninsular Malaysia Project, 01-04-01-0000 Khas 2) and Universiti Malaya (Postgraduate Research Grant, PS172/2008B), and scholarship from the Ministry of Natural Resource and Environment. Sincere gratitude also goes to LSL Chua for assisting to assess the conservation status of the taxa.

REFERENCES

Anonymous. 2008. Common vision on biodiversity in government and development process. *Reference Document for Planners, Decision-Makers and Practioners.* Ministry of Natural Resources and Environment, Kuala Lumpur.

Anonymous. 2011. Guidelines for using the IUCN Red List Categories and Criteria. Version 9.0. http://www.iucnredlist.org/documents/RedListGuidelines.pdf.

Chua LSL & Saw LG. 2006. *Malaysia Plant Red List, Guide for Contributors.* Research Pamphlet No. 129. Forest Research Institute Malaysia, Kepong.

Hoogland RD. 1953a. A review of the genus *Erycibe* Roxb. *Blumea* 7: 342–359.

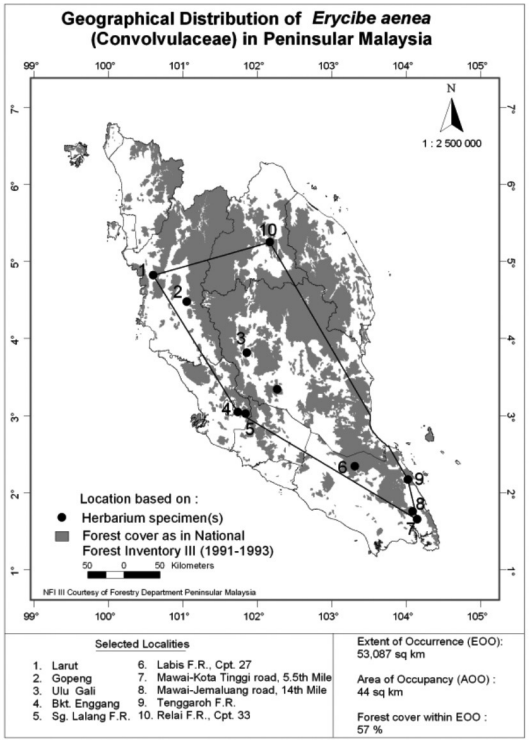
Hoogland RD. 1953b. *Erycibe.* Pp 404–431 in Van Steenis CGGJ (ed) *Flora Malesiana.* Series I, Volume 4. Noordhoff-Kolff NV, Jakarta.

Ng FSP (Ed). 1989. *Tree Flora of Malaya.* Volume 4. Malayan Forest Records No. 26. Longman Malaysia Sdn. Bhd, Petaling Jaya.

Staples G. 2010. Convolvulaceae. Pp 330–468 in Santisuk T & Larsen K (eds) *Flora of Thailand.* Volume 10, Series 3. Royal Forest Department, Bangkok.

Appendices

1 *Erycibe aenea* Prain

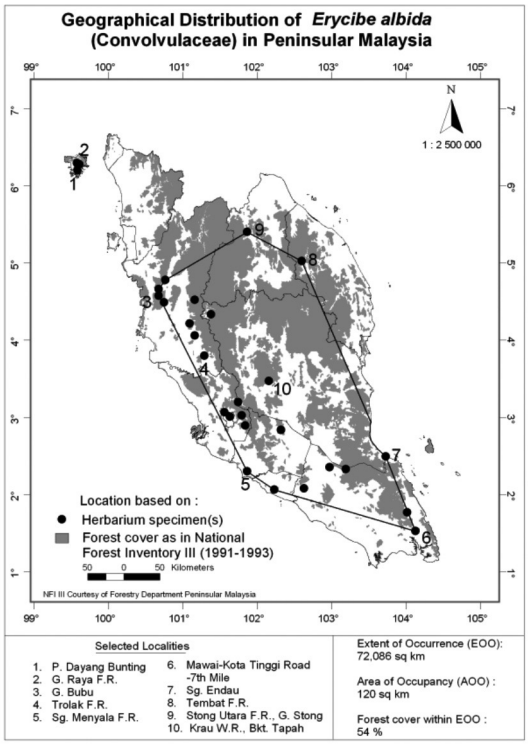


Distribution: *Erycibe aenea* has a wide distribution and is found in Johore, Kelantan, Pahang, Perak and Selangor. In many places in Johore, Kelantan and Selangor, *E. aenea* is found in forest reserves. *Erycibe aenea* is not endemic and also occurs in Sumatra (Hoogland 1953b).

Habitat and ecology: Climbs on large trees in primary forest and hill sides to 760 m altitude, in secondary forest or open and logged-over forest and on roadsides.

Conservation status: Least Concern

2 *Erycibe albida* Prain

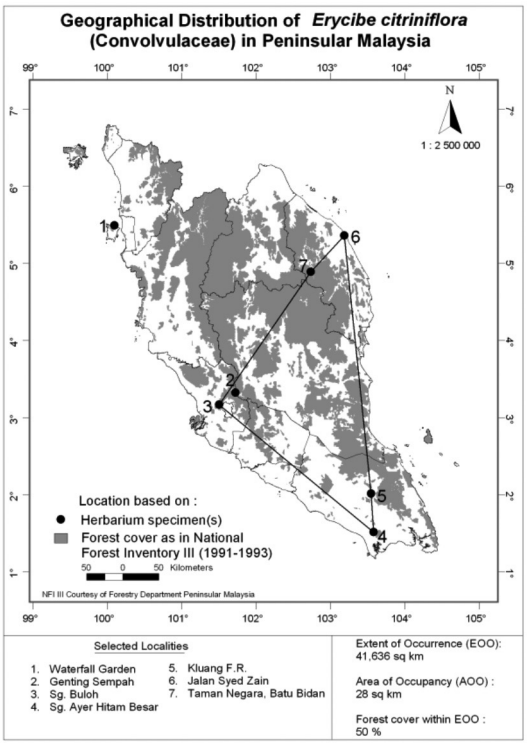


Distribution: In Peninsular Malaysia, *Erycibe albida* is widespread and found in Johore, Kedah, Kelantan, Malacca, Negeri Sembilan, Pahang, Perak, Selangor and Terengganu. In many localities *E. albida* occurs in forest reserves. It is not endemic and also occurs in Peninsular Thailand and Sumatra (Hoogland 1953b).

Habitat and ecology: In primary and secondary forests up to 820 m altitude. It is a shrub or treelet and is the most common species in the genus.

Conservation status: Least Concern

3 *Erycibe citriniflora* Griff.

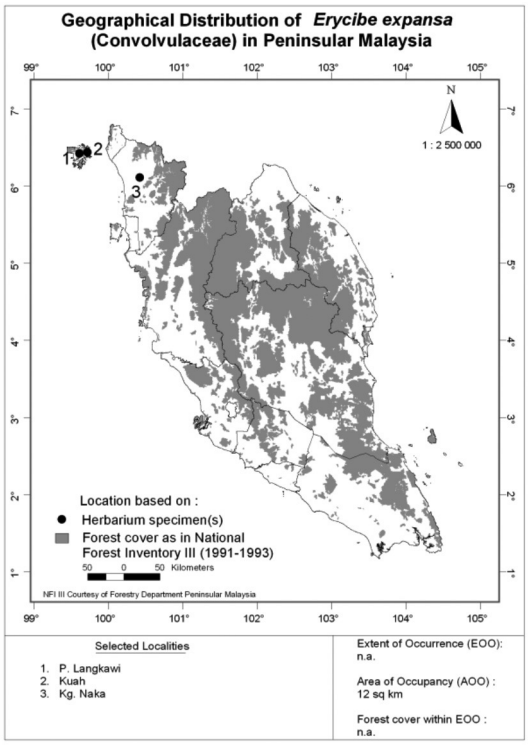


Distribution: In Peninsular Malaysia, *Erycibe citriniflora* is only found in a few localities in the states of Johore, Penang, Selangor and Terengganu. In Terengganu and Johore, it occurs in the Batu Bidan National Park and Kluang Forest Reserve respectively, which provide habitat stability. *Erycibe citriniflora* is not an endemic species and is also distributed in southern Thailand and southern Myanmar (Hoogland 1953b).

Habitat and ecology: Low altitudes both in primary and secondary forests up to 300 m altitude, sometimes near rivers. It is a woody climber or a scrambling shrub.

Conservation status: Least Concern

4 *Erycibe expansa* Wall. ex G. Don

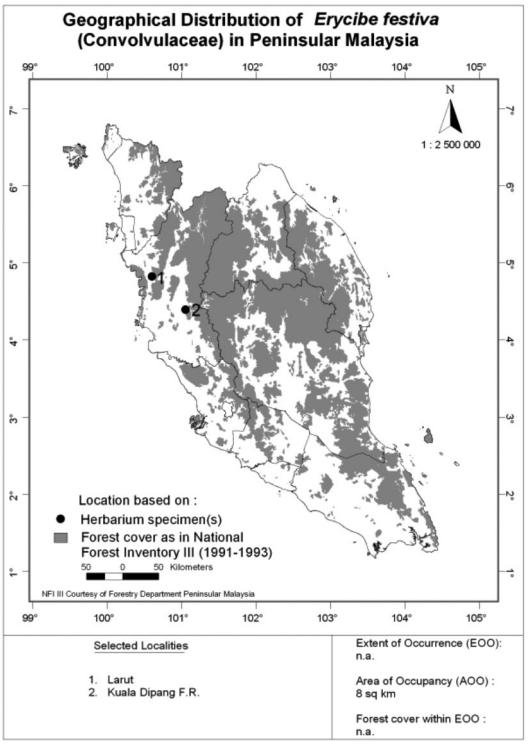


Distribution: In Peninsular Malaysia, *Erycibe expansa* is only found in three localities and is confined to only one state, Kedah including Langkawi Island. *Erycibe expansa* is not an endemic species and also occurs in southern Myanmar, Peninsular Thailand and probably also in the Nicobar Islands, India (Hoogland 1953b).

Habitat and ecology: *Erycibe expansa* grows in secondary forest at low altitudes. It is a scandent shrub.

Conservation status: Near Threatened

5 *Erycibe festiva* Prain

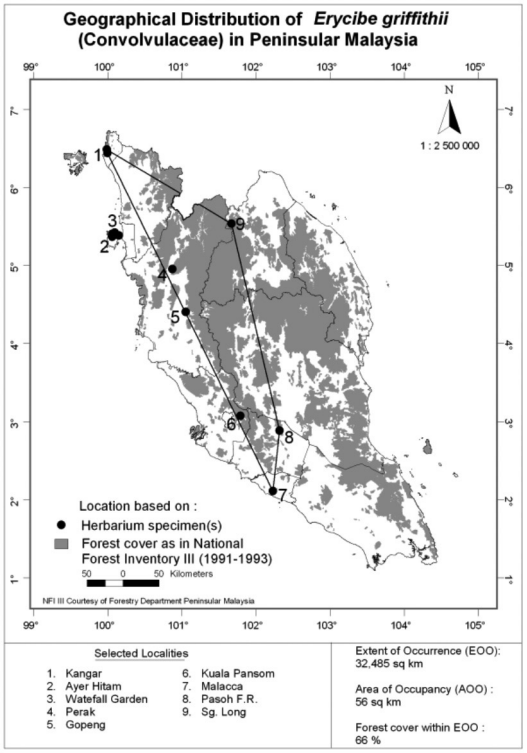


Distribution: In Peninsular Malaysia, *Erycibe festiva* is very rare and known from only two localities confined to the state of Perak. The type collection was made in 1884 from Larut. The last collection was made from Kuala Dipang Forest Reserve in 1976. *Erycibe festiva* is not an endemic species and is also distributed in Banka Island and West Java, Indonesia (Hoogland 1953b).

Habitat and ecology: *Erycibe festiva* grows in open forest at low altitudes up to 200 m altitude. It is a creeper reaching 20 m long.

Conservation status: Endangered B1ab(iii)

6 *Erycibe griffithii* C.B. Clarke

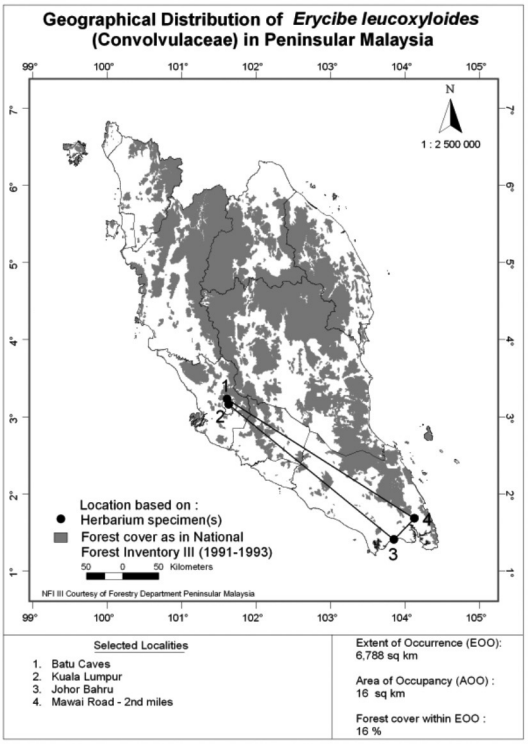


Distribution: In Peninsular Malaysia, *Erycibe griffithii* is widespread and found in many localities in the states of Kelantan, Malacca, Negeri Sembilan, Penang, Perak, Perlis and Selangor. Many collections were made from Penang Island especially around Penang Hill. This species was also collected from Pasoh Forest Reserve, Negeri Sembilan, in 1996, and Taman Herba, Perlis, in 2000. *Erycibe griffithii* is not an endemic species and its distribution extends to southern Myanmar, Indo-China and Peninsular Thailand (Hoogland 1953b).

Habitat and ecology: *Erycibe griffithii* usually grows in primary forest at low altitudes but sometimes attains 900 m on Penang Hill. It is a creeper up to 24 m long or a scandent climber.

Conservation status: Least Concern

7 *Erycibe leucoxyloides* King ex Prain

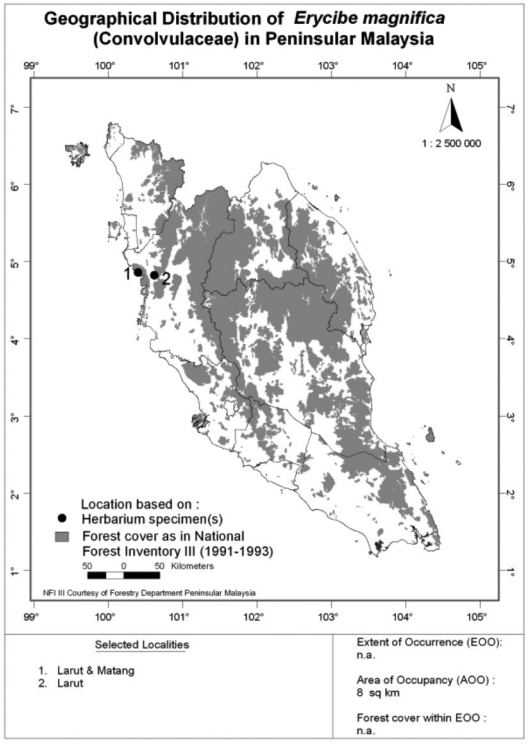


Distribution: In Peninsular Malaysia, *Erycibe leucoxyloides* has been found only from four localities confined to the states of Johore and Selangor. The last collection was recorded from Mawai road, Kota Tinggi, in 1930. It is not a common species in Peninsular Malaysia. The species is not endemic and also occurs in Singapore; a specimen in the Singapore Herbarium was collected in 2005.

Habitat and ecology: *Erycibe leucoxyloides* usually grows in open country or on roadsides at low altitudes. It is a slender, low, bushy climber.

Conservation status: Vulnerable A2c

8 *Erycibe magnifica* Prain

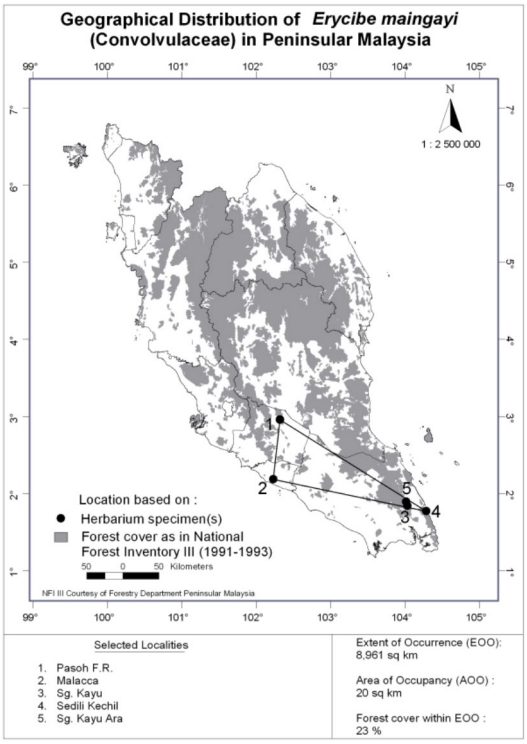


Distribution: In Peninsular Malaysia, *Erycibe magnifica* is very rare and found only in two localities confined to the state of Perak. It is endemic to Peninsular Malaysia (Hoogland 1953b).

Habitat and ecology: *Erycibe magnifica* is reported from open or dense forest up to 330 m altitude. It is a strong, slender creeper or climber clinging on large trees.

Conservation status: Data Deficient

9 *Erycibe maingayi* C.B.Clarke

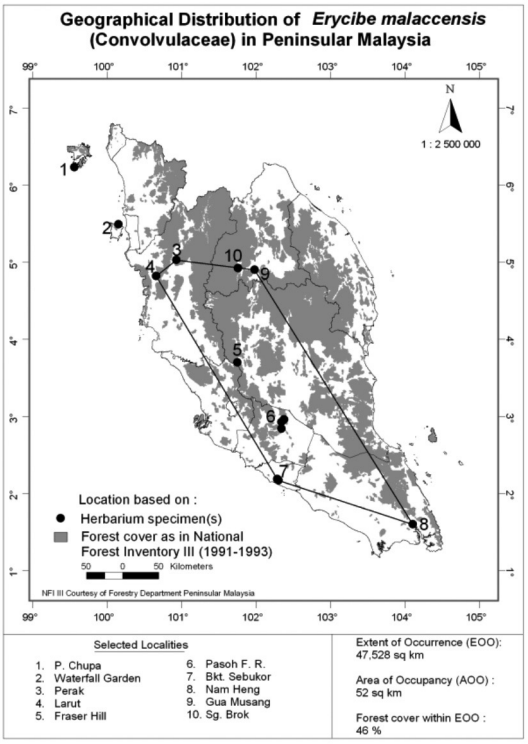


Distribution: In Peninsular Malaysia, *Erycibe maingayi* is found in the states of Johore, Malacca and Negeri Sembilan. It has been found a few times at Pasoh Forest Reserve research plot. It is not an endemic species and its distribution extends to Sumatra and Borneo (Kinabalu, Sabah) (Hoogland 1953b).

Habitat and ecology: *Erycibe maingayi* grows in forest up to 120 m, along roads and on forest margins. It is a scandent climber or a liana.

Conservation status: Least Concern

10 *Erycibe malaccensis* C.B.Clarke

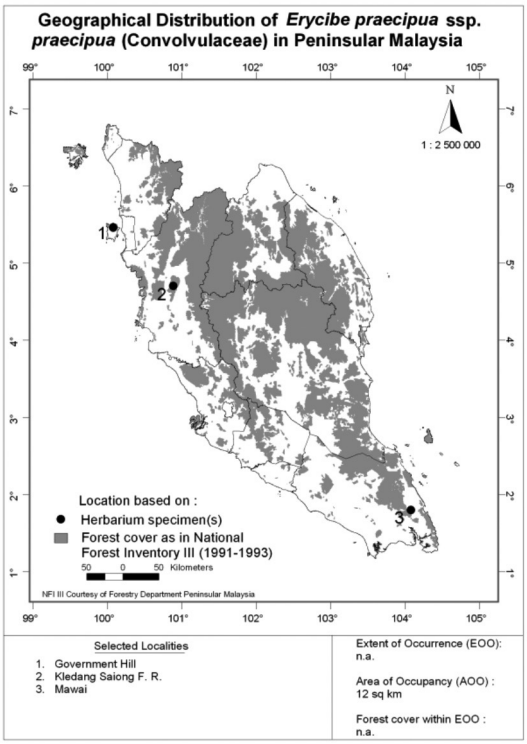


Distribution: *Erycibe malaccensis* is widespread in Peninsular Malaysia. It is found in Johore, Kedah (Langkawi), Kelantan, Malacca, Negeri Sembilan, Pahang, Penang and Perak. It is common in the Pasoh Forest Reserve research plot. It is not endemic and is also distributed in the Philippines, Celebes and probably also in West Java, Indonesia (Hoogland 1953b).

Habitat and ecology: *Erycibe malaccensis* grows in primary and secondary forests from low altitudes to 1200 m. It is a creeper or a climber.

Conservation status: Least Concern

11 *Erycibe praecipua* Prain ssp. *praecipua*

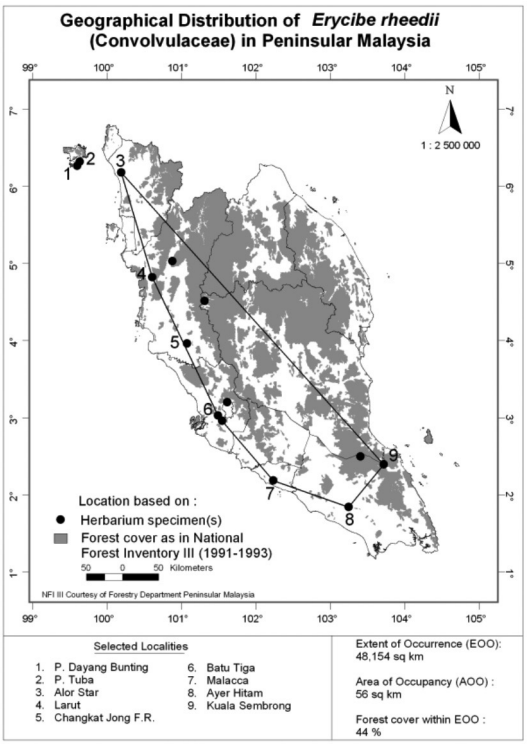


Distribution: *Erycibe praecipua* ssp. *praecipua* is found only in three localities in Johore, Penang and Perak. It is not a common taxon and is endemic to Peninsular Malaysia, while *E. praecipua* ssp. *borneensis* is endemic to Borneo (Hoogland 1953b).

Habitat and ecology: *Erycibe praecipua* ssp. *praecipua* grows in primary and secondary forests from 150 to 600 m altitude. It is a climber or a large climbing shrub.

Conservation status: Vulnerable A2c

12 *Erycibe rheedii* Blume

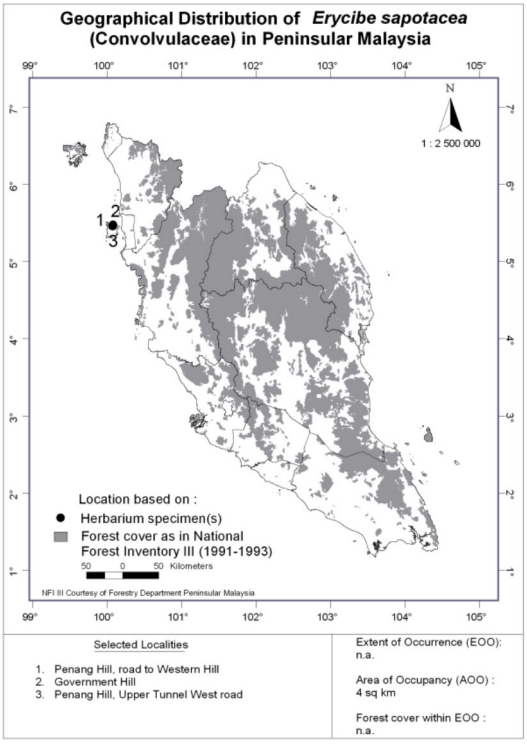


Distribution: *Erycibe rheedii* has a widespread distribution from Johore, Kedah, Malacca, Pahang (Cameron Highlands), Perak and Selangor. It is common and not endemic to Peninsular Malaysia. *Erycibe rheedii* also occurs in Sumatra, West Java, Indonesia and Borneo (Sabah) (Hoogland 1953b).

Habitat and ecology: *Erycibe rheedii* grows usually in secondary forest to 240 m altitude. It is a large climber or a creeper.

Conservation status: Least Concern

13 *Erycibe sapotacea* Hallier *f.* & Prain ex Prain

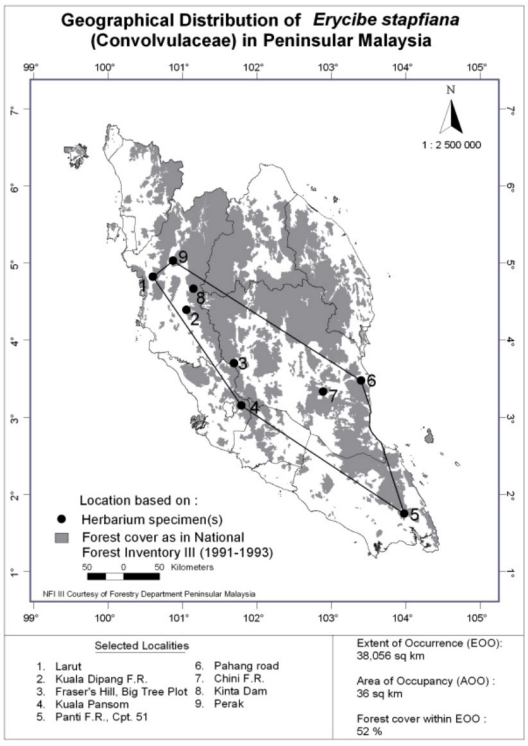


Distribution: *Erycibe sapotacea* is known only from Penang. It is endemic to Peninsular Malaysia (Hoogland 1953b).

Habitat and ecology: *Erycibe sapotacea* grows near roadsides and in open areas up to 760 m altitude. It is a scandent shrub or a large woody climber.

Conservation status: Endangered A4c

14 *Erycibe stapfiana* Prain

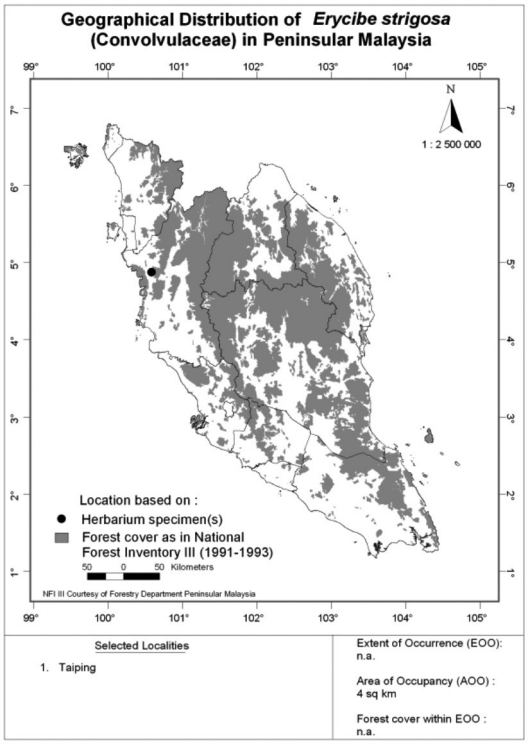


Distribution: *Erycibe stapfiana* is distributed from Johore, Pahang, Perak and Selangor. It is not endemic to Peninsular Malaysia and its distribution extends to Peninsular Myanmar (Hoogland 1953b).

Habitat and ecology: *Erycibe stapfiana* grows in dense forest up to 1200 m altitude. It is a creeper or a climber of the forest canopy.

Conservation status: Least Concern

15 *Erycibe strigosa* Prain

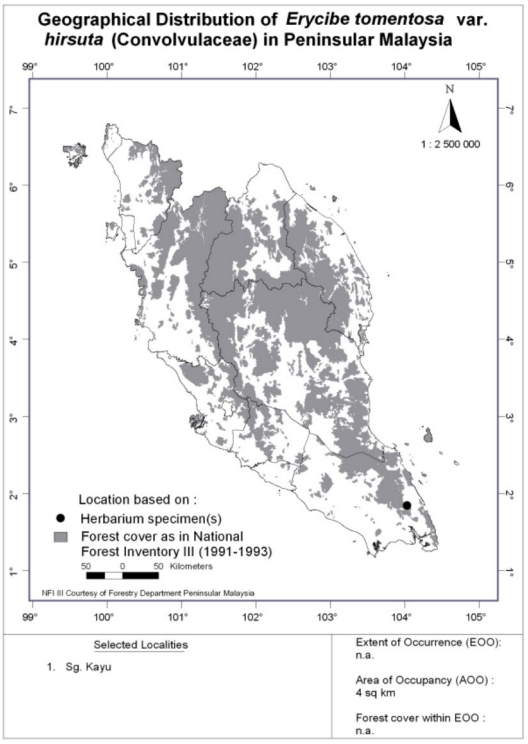


Distribution: *Erycibe strigosa* was collected only once from Taiping, Perak, in 1886. It is endemic to Peninsular Malaysia (Hoogland 1953b). Information on the habitat and population from the single known locality is not comprehensive therefore very limited; no ecological and population data are available. A research study on the habitat and population range is required. Thus, status of the species cannot be assessed because no recent collection has been made. At present, no suitable category can be given for the species.

Habitat and ecology: *Erycibe strigosa* is reported to grow in dense forest from 150 to 240 m altitude. It is a creeper, clinging to trees.

Conservation status: Data Deficient

16 *Erycibe tomentosa* Blume var. *hirsuta* (Hallier *f.*) Hoogl.

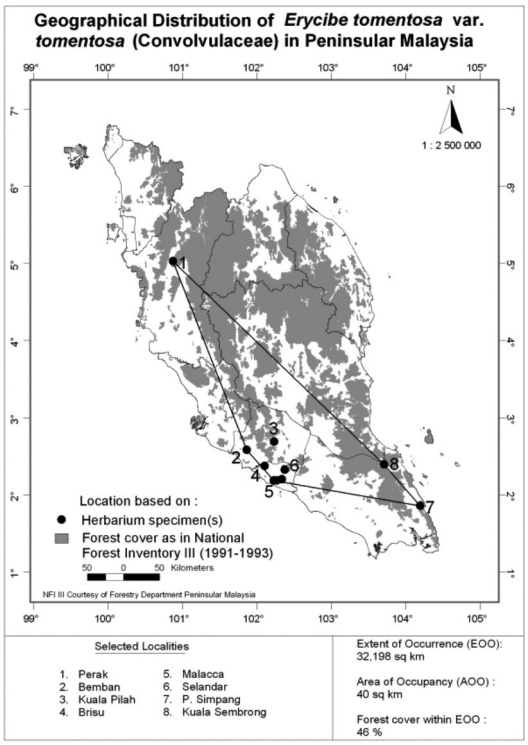


Distribution: *Erycibe tomentosa* var. *hirsuta* is known only from Sungai Kayu, Kota Tinggi, Johore. It is not endemic to Peninsular Malaysia but distributed in Sumatra, Singapore and Borneo (Hoogland 1953b).

Habitat and ecology: *Erycibe tomentosa* var. *hirsuta* grows at low altitudes in swampy areas. It is a climber.

Conservation status: Critically Endangered B2ab(iii)

17 *Erycibe tomentosa* Blume var. *tomentosa*



Distribution: *Erycibe tomentosa* var. *tomentosa* is known from Johore, Malacca, Negeri Sembilan and Perak. It is not endemic to Peninsular Malaysia and is distributed in Sumatra, West Java, Madura, Borneo and the Philippines (Hoogland 1953b).

Habitat and ecology: *Erycibe tomentosa* var. *tomentosa* grows in secondary forest at low altitudes. It is a creeper climber.

Conservation status: Least Concern