

NTFP Sustainable Harvesting and Resource Management Protocol

Rattan



NTFP Protocols Series

This publication is part of a series of sustainable harvest and resource management protocols to promote good practice in NTFP management.

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Rattan

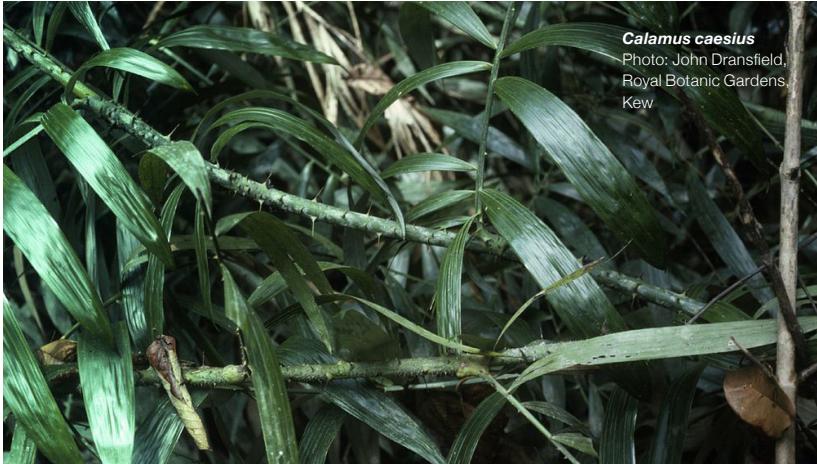


Rattan is typically a climbing palm that grows in tropical regions, including Southeast Asia. An important renewable NTFP, it is found in forests and also cultivated in rattan gardens for use in making handicrafts and furniture, and as construction material. Rattan has been cultivated by local communities from generation to generation for local use and income generation (Matius, 1981). Rattan is often categorized as those that have solitary stems like manau (*Calamus manan* Miq.), and those that have clustering stems like sega (*Calamus caesius* Blume), batang (*Calamus zollingeri* Becc.) and batang merah (*Daemonorops robusta* Warb).



Rattan fall into eight genera: *Calamus*, *Ceratolobus*, *Cornera*, *Daemonorops*, *Korthalsia*, *Myrialepis*, *Plectocomia*, and *Plectocomiopsis*. *Calamus* is currently the largest genus of palms. Govaerts and Dransfield (2005) recognized 374 species, and more have been added since, making a total of about 400. The genus is classified in the subtribe *Calaminae*, tribe *Calameae*, subfamily *Calamoideae* (Dransfield et al., 2008). Currently in 2019, seven new species were found in Sumatra (Henderson & Rustiami, 2019) bringing the total number in Indonesia to at least 100 species (Rustiami, pers.comm. 2020).

In Indonesia, the commonly cultivated rattan species are sega (*Calamus caesius*), jahab (*Calamus trachycoleus*), jepukng (*Daemonorops crinita*), semambu (*Calamus scipionum*), and pelas (*Calamus penicillatus*).



Most rattan species inhabit wet tropical rainforests (evergreen forests). Rattan can be found in both drylands (*Calamus caesius* (sega/taman), *Calamus optimus* (seletup), *Calamus manan* (manau) and wetlands/alluvial areas (*Calamus trachycoleus* (jahab, irit), *Daemonorops crinita* (pulut merah, jepung)). Some rattan species are found in both drylands and wetlands. In sandy clay and periodically flooded areas balubuk (*Calamus burchianus*) and sega air (*Calamus axillaris*) are found. In limestone rocky mountain areas manau padi (*Calamus marginatus*) grows and in peat swamp areas only dahan/andung grows (*Kortalsia flagellaris*) (Rachman and Jasni, 2013).

Many of the species found in Indonesia are wild rattan, which have a bigger diameter than cultivated rattan. In Sulawesi, the most commonly traded species are seuti (*Calamus ornatus* Bl), lambang (*Calamus ornatus* var *celebius* Becc.), batang (*Calamus zollingeri* Becc), noko (*Calamus koordersianus* Becc), batang merah (*Daemonorops robusta* Warb.), sigisi (*Calamus orthostachys* Furtado) and tohiti (*Calamus inops*).

In Vietnam, there are 56 species recorded: *Calamus* (41); *Daemonorops* (8); *Kortalsia* (2); *Myrialepis* (1); *Plectocomia* (2); and *Plectocomiopsis* (2). Of this number, 31 are endemic to Vietnam. At least 32 species are popularly used, while four species are believed to be extinct. New species to science were also identified recently: *Calamus parvulus* (Henderson & N.Q. Dung) and *Calamus spiralis* (Henderson, N. K. Ban & N. Q. Dung).

In Laos, there are six genera of rattan: Calamus, Deamonorops, Korthalsia, Merialepis paradoxa, Plectocomia, and Plectocomiopsis. There are 32 species, with five new ones: Calamus laoensis, Calamus bimaniferus, Calamus evansii, Calamus oligostachys, Calamus solitaires.

In Peninsular Malaysia, there are about 107 species of rattan comprising 8 genera. However, only 20 species have been identified to have market value. Among them are Calamus Manan, C. ornatus, C. turnidus, C. scipionium, and C. Caesius.

There are many threats to the rattan industry. Unsustainable harvest practices have led to forest degradation and problems in regeneration. Changes in ecological conditions have resulted in habitat loss and affected variety, with some rattan species now included in the IUCN Red List of Threatened Species. Rattan farmers and gatherers face the threat of land speculation, land conversion into mining, oil palm plantation, coffee and cacao plantation, urbanization and infrastructure. Loss of traditional knowledge has led to a general lack of knowledge and awareness about rattan. Less people are interested in harvesting rattan or maintaining rattan gardens due to low market prices, forcing farmers to sell or convert their land to other uses. The use of chemicals and trade in synthetic rattan are some of the causes for the unstable market. At the institutional level, lack of political will in crafting policies and enforcing regulations is a major concern.

**Woman IP member
harvesting rattan**
Photo: NTFP-EP Malaysia



Thumb Rules for Rattan in Traditional Forest Communities



- ✓ Respect local customs and rituals related to rattan harvesting.
- ✓ Do not cut support trees; if needed, climb or use other tools to cut and pull the rattan.
- ✓ After harvesting rattan, clean the leaf litter, twigs, or grass that cover the shoots so that these can be exposed to sunlight and are able to grow well.
- ✓ Rattan clumps are important for breeding, they should not be damaged. After harvest, leaves and sheaths should be chopped and put on clumps.
- ✓ Do not damage seedlings.
- ✓ Do not harvest rattan canes that are fruiting in low density areas.
- ✓ Rattan harvesting is recommended in the dry season, so that stems dry quickly. If rattan is harvested during the rainy season, longer drying time is required to avoid being damaged by fungus and insects. If the rainy season is longer than six months, however, often harvesting is done in the middle of the rainy season (Indonesia).
- ✓ Use appropriate tools and observe safety.
- ✓ Rattan is cut 1 to 1.5 meters from the ground and stems are left bent down to prevent fungus from damaging other stems (although in some countries, rattan is cut 20 cm from the ground; practices differ depending on the species).
- ✓ Length indicator depends on the market demand and according to the standard (Indonesia).
- ✓ Observe proper and sustainable processing and treatment methods for rattan.

- ✓ There should be transparency in supply chain information.
- ✓ Presence of national associations, community rules, and regulations are important in rattan harvesting and management.
- ✓ Advocate for supportive policies.
- ✓ Local groups or people's organizations ensure proper resource management and monitoring.





01 Ecological

- 30%-50% ideal canopy for growth of rattan (Vietnam)
- General growth of rattan at an altitude of 0-1500 meters above sea level with rainfall condition not less than 2000 mm/year, humidity around 40-60% and light intensity for growth of 20-50%. (Indonesia)
- Best elevation is 700 meters above sea level (Vietnam), but generally there are more rattan species in evergreen and semi-evergreen forests with altitudes from just above sea level to around 1,000 masl.
- Observe the number of plant and animal species in rattan gardens (Indonesia).
- Observe the number of plant and animals (invasive species and herbivores) that damage rattan gardens (Indonesia).
- Rattan is usually found in forest areas that have high humidity (\pm 60%), secondary forests, shrubs, and available support trees for climbing rattan.
- Proper soil and location of sites for cultivated rattan

02 Harvest

- Identification of rattan reserves
- Harvest less than 80% of harvestable rattan. Mature rattan is often at a length longer than 5 meters.
- Rattan that is ready to be harvested has several characteristics that can be observed. Some leaves are yellow and dried up. Most of the petals of the lower leaves have fallen off, are blackish brown, and are usually scattered under the stem. The part of stem which has been opened is dark green.
- Harvesting rattan during the dry season hastens the drying process. But care has to be taken that residual parts that fall when the stem is cut does not damage the young stems and saplings in rattan clumps.
- When harvesting during the rainy season, cover the stumps of cut stems to prevent water from entering the plant.
- Remaining portion of the cane after cutting should be shorter than 20 cm from the ground (Vietnam).
- Lesser exploitation of rattan in steep areas or eroded riverbanks to be followed

- Protect support trees for rattan to climb on when they start to grow longer.
- Leaf sheath is color brown, falling off, cane color yellow and shiny when dried, stem is shiny and does not easily break when bent, there is a “Tik-tik” sound when cane is bent or when silica falls off the cane (Indonesia)
- Take note of stock density and length distribution; yield has size-specific growth per year (Laos).

03 Trade and Markets

- Standard system has been set and is available.
- There is available and transparent information sharing in the value chain.
- There are market or regulatory incentives for sustainable rattan management.

04 Institutions

- Participatory planning and assessment
- Participatory regulation development
- Monitor harvest records and rattan management plans to ensure feedback mechanism or synergies among stakeholders.



Policies and Regulations

- Policies are in place to protect rattan gardens and forests.
- Community participation is present in rattan harvesting.
- Ban on rattan export policy being reviewed
- Monitor policies affecting rattan (trade and export, tenure, etc.).

Monitoring Methods

- Participatory mapping and inventory of rattan species in an area or site
- Monitor before harvest and after harvest indicators of rattan annually.
- Monitor harvest methods.
- Maintain harvest records of species and volume harvested.
- Forest patrol and sample plots to monitor regeneration of rattan looking at length class distribution
- Inventory of biodiversity in rattan gardens and rattan forests
- Determine signals of ecological impact (logging, fire).
- Annual focus group discussions are conducted among producers, governments, and associations.
- Monitoring rattan product prices and the impact on harvests and harvest practices
- Impact monitoring (Laos)

Climate Adaptation

- Monitor if climate-related factors (e.g. warmer temperature, stronger typhoons) affect the growth of rattan.
- Monitor if irregular rainfall affects quantity of rattan.
- Ensure that traditional practices are still sustainable in light of the changing climate.

Participatory Guarantee System for Rattan in Indonesia



NTPF–EP Indonesia and rattan stakeholders started the process of developing a sustainability standard for rattan in 2012. This was sparked by the need to raise perceived values of Indonesian rattan. The prices had dropped as a result of certain policies at that time. The stakeholders knew there were certification mechanisms that catered to “green” markets and environmentally conscious buyers, but they were concerned that many of these third-party certification systems were expensive and not entirely appropriate for rattan systems where local people are often the experts and not external inspectors.

Thus, NTPF–EP and stakeholders embarked on installing a Participatory Guarantee Systems (PGS) for rattan in Indonesia. Participatory Guarantee Systems (PGS) are locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange.

The stakeholders involved were civil society partners supporting rattan farmers and gatherers, national and local government partners, local rattan associations, rattan weavers, and scientists. After three years of discussions and meetings with farmers, gatherers, government officials, rattan manufacturers, and other stakeholders, the PGS called ROLES Rotan Lestari Indonesia (Sustainable Rattan in the Indonesian language) was ready. Standards and procedures for sustainable rattan harvesting and management under ROLES are found in Table 1.

By the end of 2019, at least four rattan producer groups with 150 members in two islands covering three provinces were utilizing ROLES standards and engaging with national and international rattan buyers. The ROLES PGS system aims to contribute to the overall goal of increasing benefits for rattan producers and promoting sustainable forest management.

Table 1. PGS Rattan Standard (ROLES PGS Standards, 2015)

Criteria	Indicators
Legality	<ul style="list-style-type: none"> • Rattan is harvested from areas where rights over land and resources are clear. • Authorities have granted permission to harvest rattan in this area. Plans to harvest rattan in the area do not exceed limits granted. • No illegal activities related to natural resource management are found in the forest where rattan is harvested.
Production Sustainability	<ul style="list-style-type: none"> • Inventory, management planning and monitoring of the area is conducted periodically. • Harmful chemicals are not used in the process of harvesting/planting, handling, and processing rattan. • Rattan is harvested sustainably by considering the rules, science-based methods and local knowledge that cover aspects such as: securing rattan regeneration, sustainable harvesting, and biological diversity. • Income diversification of the area/forest is considered.
Ecological Sustainability	<ul style="list-style-type: none"> • Proper waste management is applied in the process of harvesting, planting, handling, and processing of rattan. • The process of harvesting rattan does not harm species and habitats of high conservation value. • The process of harvesting does not change the landscape and forest cover.

Criteria	Indicators
Socio-Cultural Factors	<ul style="list-style-type: none"> • Rattan harvesters' group have received approval from the larger community in the area. • Youth that may be involved in the process of harvesting, handling, and processing of rattan are not losing days in school nor sacrificing play hours. • Equal opportunities for men and women in the process of harvesting, planning, handling, processing rattan, and capacity development within the group/organization • There are written rules about the group/organization. • The group/organization provides some of its profits to local community. • The group/organization has a mechanism for conflict resolution. • The group/organization is concerned about capacity building of its members.
Traceability	<ul style="list-style-type: none"> • Raw materials and processed rattan can be traced back to its origin.

References

- [ASEAN] Association of Southeast Asian Nations. 2020. ASEAN Guidelines for Sustainable Harvest and Resource Management Protocols for Selected Non-Timber Forest Products (NTFPs). Authors: Guerrero, MCS, Varghese, A., Conlu, M.T., San Jose, D. Jakarta, Indonesia.: ASEAN Secretariat.
- Belcher, B., & Schreckenber, K. (2007). Commercialisation of non-timber forest products: A reality check. *Development Policy Review*.25(3), 355-377. [dx.doi.org/10.1111/j.1467-7679.2007.00374.x](https://doi.org/10.1111/j.1467-7679.2007.00374.x)
- Berkes, F. & Berkes, MK. (2009). Ecological complexity, fuzzy logic, and holism in indigenous knowledge. *Futures* 41(1), 6-12.
- Chao, S. (2012). Forest peoples: numbers across the world. *Forest Peoples Programme*, 27.
- Cunningham, A. (2001). *Applied ethnobotany: people, wild plant use and conservation*. Earthscan.
- Dali, J. & Sumarna. (1996). *Pengenalan jenis-jenis rotan Indonesia*. Himpunan Diklat Penguji Rotan Kerjasama Puslitbang Hasil Hutan-PT. Sucofindo, Bogor. Tidak diterbitkan.
- De Beer, J. & McDermott, M. (1989). *The economic value of non-timber forest products in Southeast Asia: with emphasis on Indonesia, Malaysia, and Thailand*.
- Dransfield, J. (1974). *A short guide to rattan*. SEAMEO, Regional Center for Tropical Biology. Biotrop/FT/128. Bogor, Indonesia.
- Dransfield, J., Uhl, N.W., Asmussen, C.B., Baker, W.J., Harley, M.M. & Lewis, C.E. (2008). *Genera Palmarum: The evolution and classification of palms*. Kew: Royal Botanic Gardens.
- [FAO] Food and Agriculture Organization of the United Nations. (2010). *FAO Forestry Paper 163: Global forest resources assessment 2010*. Rome, Italy: Food and Agriculture Organization of the United Nations.
- Forestry Department of Peninsular Malaysia. Retrieved from: <https://www.forestry.gov.my/en/buluh-dan-rotan>.
- Fortune. (2019, November 5). Consumers say they want more sustainable products. Now they have the receipts to prove it. Retrieved from <https://fortune.com/2019/11/05/sustainability-marketing-consumer-spending/>.
- Gadgil, M. (1992). Conserving biodiversity as if people matter: a case study from India. *Ambio* (1992), 266-270.
- Guerrero, C. (2019). *Policy and Trade in NTFPs in ASEAN: Examples of what is supportive of sustainable community-based NTFP management and what is not*
- Guerrero, C. and NTFP-EP. (2020). *Socio-ecological Framework for NTFP Protocols: Developing ASEAN Guidelines for Sustainable Harvest and Resource Management Protocols for Bamboo and Rattan Resources*

- Harvard Business Review. (2019, June 19). Research: Actually Consumers Do Buy Sustainable Products. Retrieved from: <https://hbr.org/2019/06/researchactually-consumers-do-buy-sustainable-products>.
- Henderson, A. & Rustiami, H. (2019). New species of Calamus (Arecaceae; Calamoideae; Calaminae) from Sumatra. *Phytotaxa* 415(3), 117–129.
- Husnu Can Baser, K., & Buchbauer, G. (2010). *Handbook of Essential Oils: Science Technology and Application*. Boca Raton, Florida.
- Jasni, K., Kalimta, T. & Aburachman (2012). *Atlas Rotan Indonesia*. Jilid 3. Pusat Penelitian dan Pengembangan Keteknikan Kehutanan dan Pengolahan Hasil Hutan. Bogor, Indonesia.
- Keystone Foundation (2009). *Non-Timber Forest Products: Protocols for Harvest*. Kotagiri, Tamil Nadu, India.
- Matius, P. (2020). *Rattan Gardens: Traditional Wisdom of Benuaq Tribe to Manage Biodiversity Conservation*
- Mohamad A., Noor, N.S.M., Woon, W.C. (1992). Economics of cultivation of large diameter rattans. *Malayan Forest Record* 35, 205-237.
- Morsello, C., Ruiz-Mallén, I., Diaz, M. D. M., & Reyes-García, V. (2012). The effects of processing non-timber forest products and trade partnerships on people's well-being and forest conservation in Amazonian societies. *PLoS One*, 7(8), e43055. doi:10.1371/journal.pone.0043055.
- Muliandari, N. (2020). *Defining Protocols: Developing ASEAN Guidelines for Sustainable Harvest and Resource Management Protocols for Bamboo and Rattan Resources*
- Odochao, S. (2019). *Harvest with the Karen Indigenous Knowledge: Slowdown for the Earth*
- Peters, C.M., Gentry, A.H., Mendelsohn, R.O. (1989). Valuation of an Amazonian rainforest. *Nature* 339(6227), 655-656.
- Quoc Dung, N. – Forest Inventory Planning Institute Vietnam. (2020). *Study on Rattan in Vietnam Systematics and Management*
- Rachman, O. & Jasni (2013). *Rotan. Sumberdaya, Sifat dan Pengolahannya*. Pusat Penelitian dan Keteknikan Kehutanan dan Pengolahan Hasil Hutan, Bogor, Indonesia.
- Rustiami, H. (2009). Telaah pemanfaatan rotan di kawasan Cagar Biosfer Lore Lindu, Sulawesi Tengah. *Prosiding Seminar Nasional Etnobotani IV*: 489-493.
- Rustiami, H. & Henderson, A. (2017). A synopsis of Calamus (Arecaceae) in Sulawesi. *Reinwardtia*, 16(2): 49–63.
- Shackleton, C., Shackleton, S., & Shanley, P. (2011). Building a holistic picture: An integrative analysis of current and future prospects for non-timber forest products in a changing world. In: *Non-timber forest products in the global context* (pp. 255-280). Springer, Berlin, Heidelberg.
- Sodhi, N.S., Posa, M.R.C., Lee, T.M., Bickford, D., Koh, L.P., & Brook, B.W. (2009). The state and conservation of Southeast Asian biodiversity. *Biodiversity and Conservation*, 19(2), 317-328. doi:10.1007/s10531-009-9607-5.

- Siebert S.F. (1997). Economically important rattans of Central Sulawesi, Indonesia. *Principes*, 41(1), 42-46.
- Son, H.N., & Thang, P.V. (2013). Bamboo and Rattan species planting technics. Agriculture Publish House of Vietnam.
- Spellerberg, I.F. (2005). *Monitoring ecological change*. Cambridge University Press.
- Stockdale, M. (2005). Steps to sustainable and community-based NTFP management: A manual written with special reference to South and Southeast Asia. NTFP Exchange Programme for South and Southeast Asia.
- Thammavong, B. – Forestry Research Center National Agriculture and Forestry Research Institute. (2020). Sustainable Rattan Harvest and Management in Lao PDR
- Ticktin, T. (2004). The ecological implications of harvesting non-timber forest products. *Journal of Applied Ecology*, 41(1), 11-21.
- Ticktin, T. & Shackleton, C. (2011). Harvesting non-timber forest products sustainably: opportunities and challenges.” In *Non-timber forest products in the global context* (pp. 149-169). Springer, Berlin, Heidelberg.
- Turner, N.J. & Berkes, F. (2006). Coming to understanding: developing conservation through incremental learning in the Pacific Northwest. *Human Ecology* 34(4), 495-513.
- [UNDP] United Nations Development Programme. (2019). *Human Development Report Cambodia 2019: Sustaining Natural Resources for All*. Authors: Saito Jensen, M., Colin Marshall, et al,. Cambodia: UNDP. Retrieved from: http://hdr.undp.org/sites/default/files/nhdr_cambodia.pdf.
- Varghese, A. – Keystone Foundation India (2019). *Socio-ecological Framework for NTFP Protocols*
- Vedeld, P., Angelsen, A., Sjaastad, E., & Berg, G. K. (2004). Counting on the environment - forest incomes and the rural poor. Environment Department Papers. doi:10.1177/1420326X04041346
- Vorontsova, M.S., Clark, L.G., Dransfield, J., Govaerts, R.H.A., Baker, W.J. (2016). *World checklist of bamboos and rattans*. International Network of Bamboo and Rattan & the Board of Trustees of the Royal Botanic Gardens, Kew.
- Vu, N.L & Luu, H.T. (2009). *Research on conservation, development and sustainable use of Non-Timber Forest Products in Nui Chua National Park, Ninh Thuan province*. Unpublished technical report.
- Wunder, S. (2014). Forests, livelihoods and conservation : Broadening the empirical base. *WORLD DEVELOPMENT*, xx. doi:10.1016/j.worlddev.2014.03.007

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