

Building evidence for conservation globally

Journal of Threatened Taxa



Open Access

10.11609/jott.2025.17.6.27035-27170

www.threatenedtaxa.org

26 June 2025 (Online & Print)

17(6): 27035-27170

ISSN 0974-7907 (Online)

ISSN 0974-7893 (Print)





ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher
Wildlife Information Liaison Development Society
www.wild.zooreach.org

Host
Zoo Outreach Organization
www.zooreach.org

Srivari Illam, No. 61, Karthik Nagar, 10th Street, Saravanampatti, Coimbatore, Tamil Nadu 641035, India
Registered Office: 3A2 Varadarajulu Nagar, FCI Road, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Ph: +91 9385339863 | www.threatenedtaxa.org
Email: sanjay@threatenedtaxa.org

EDITORS

Founder & Chief Editor

Dr. Sanjay Molur

Wildlife Information Liaison Development (WILD) Society & Zoo Outreach Organization (ZOO),
Coimbatore, Tamil Nadu 641006, India

Assistant Editor

Dr. Chaithra Shree J., WILD/ZOO, Coimbatore, Tamil Nadu 641006, India

Managing Editor

Mr. B. Ravichandran, WILD/ZOO, Coimbatore, Tamil Nadu 641006, India

Associate Editors

Dr. Mandar Paingankar, Government Science College Gadchiroli, Maharashtra 442605, India

Dr. Ulrike Streicher, Wildlife Veterinarian, Eugene, Oregon, USA

Ms. Priyanka Iyer, ZOO/WILD, Coimbatore, Tamil Nadu 641006, India

Board of Editors

Dr. Russel Mittermeier

Executive Vice Chair, Conservation International, Arlington, Virginia 22202, USA

Prof. Mewa Singh Ph.D., FASC, FNA, FNASC, FNAPsy

Ramanna Fellow and Life-Long Distinguished Professor, Biopsychology Laboratory, and
Institute of Excellence, University of Mysore, Mysuru, Karnataka 570006, India; Honorary
Professor, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore; and Adjunct
Professor, National Institute of Advanced Studies, Bangalore

Stephen D. Nash

Scientific Illustrator, Conservation International, Dept. of Anatomical Sciences, Health Sciences
Center, T-8, Room 045, Stony Brook University, Stony Brook, NY 11794-8081, USA

Dr. Fred Pluthero

Toronto, Canada

Dr. Priya Davidar

Sigur Nature Trust, Chadapatti, Mavinahalla PO, Nilgiris, Tamil Nadu 643223, India

Dr. John Fellowes

Honorary Assistant Professor, The Kadoorie Institute, 8/F, T.T. Tsui Building, The University of
Hong Kong, Pokfulam Road, Hong Kong

Prof. Dr. Mirco Solé

Universidade Estadual de Santa Cruz, Departamento de Ciências Biológicas, Vice-coordenador
do Programa de Pós-Graduação em Zoologia, Rodovia Ilhéus/Itabuna, Km 16 (45662-000)
Salobrinho, Ilhéus - Bahia - Brasil

Dr. Rajeev Raghavan

Professor of Taxonomy, Kerala University of Fisheries & Ocean Studies, Kochi, Kerala, India

English Editors

Mrs. Mira Bhojwani, Pune, India

Dr. Fred Pluthero, Toronto, Canada

Copy Editors

Ms. Usha Madgunaki, Zooreach, Coimbatore, India

Ms. Trisa Bhattacharjee, Zooreach, Coimbatore, India

Ms. Paloma Noronha, Daman & Diu, India

Web Development

Mrs. Latha G. Ravikumar, ZOO/WILD, Coimbatore, India

Typesetting

Mrs. Radhika, Zooreach, Coimbatore, India

Mrs. Geetha, Zooreach, Coimbatore, India

Fundraising/Communications

Mrs. Payal B. Molur, Coimbatore, India

Subject Editors 2021–2023

Fungi

Dr. B. Shivaraju, Bengaluru, Karnataka, India

Dr. R.K. Verma, Tropical Forest Research Institute, Jabalpur, India

Dr. Vatsavaya S. Raju, Kakatiya University, Warangal, Andhra Pradesh, India

Dr. M. Krishnappa, Jnana Sahyadri, Kuvempu University, Shimoga, Karnataka, India

Dr. K.R. Sridhar, Mangalore University, Mangalagangothri, Mangalore, Karnataka, India

Dr. Gunjan Biswas, Vidyasagar University, Midnapore, West Bengal, India

Dr. Kiran Ramchandra Ranadive, Annasaheb Magar Mahavidyalaya, Maharashtra, India

Plants

Dr. G.P. Sinha, Botanical Survey of India, Allahabad, India

Dr. N.P. Balakrishnan, Ret. Joint Director, BSI, Coimbatore, India

Dr. Shonil Bhagwat, Open University and University of Oxford, UK

Prof. D.J. Bhat, Retd. Professor, Goa University, Goa, India

Dr. Ferdinando Boero, Università del Salento, Lecce, Italy

Dr. Dale R. Calder, Royal Ontario Museum, Toronto, Ontario, Canada

Dr. Cleofas Cervancia, Univ. of Philippines Los Baños College Laguna, Philippines

Dr. F.B. Vincent Florens, University of Mauritius, Mauritius

Dr. Merlin Franco, Curtin University, Malaysia

Dr. V. Irudayaraj, St. Xavier's College, Palayamkottai, Tamil Nadu, India

Dr. B.S. Kholia, Botanical Survey of India, Gangtok, Sikkim, India

Dr. Pankaj Kumar, Department of Plant and Soil Science, Texas Tech University, Lubbock, Texas, USA.

Dr. V. Sampath Kumar, Botanical Survey of India, Howrah, West Bengal, India

Dr. A.J. Solomon Raju, Andhra University, Visakhapatnam, India

Dr. Vijayasankar Raman, University of Mississippi, USA

Dr. B. Ravi Prasad Rao, Sri Krishnadevaraya University, Anantpur, India

Dr. K. Ravikumar, FRLHT, Bengaluru, Karnataka, India

Dr. Aparna Watve, Pune, Maharashtra, India

Dr. Qiang Liu, Xishuangbanna Tropical Botanical Garden, Yunnan, China

Dr. Noor Azhar Mohamed Shazili, Universiti Malaysia Terengganu, Kuala Terengganu, Malaysia

Dr. M.K. Vasudeva Rao, Shiv Ranjani Housing Society, Pune, Maharashtra, India

Prof. A.J. Solomon Raju, Andhra University, Visakhapatnam, India

Dr. Mandar Datar, Agharkar Research Institute, Pune, Maharashtra, India

Dr. M.K. Janarthanam, Goa University, Goa, India

Dr. K. Karthikeyan, Botanical Survey of India, India

Dr. Errol Vela, University of Montpellier, Montpellier, France

Dr. P. Lakshminarasimhan, Botanical Survey of India, Howrah, India

Dr. Larry R. Noblick, Montgomery Botanical Center, Miami, USA

Dr. K. Haridasan, Pallavur, Palakkad District, Kerala, India

Dr. Analinda Manila-Fajard, University of the Philippines Los Baños, Laguna, Philippines

Dr. P.A. Sinu, Central University of Kerala, Kasaragod, Kerala, India

Dr. Afroz Alam, Banasthali Vidyapith (accredited A grade by NAAC), Rajasthan, India

Dr. K.P. Rajesh, Zamorin's Guruvayurappan College, GA College PO, Kozhikode, Kerala, India

Dr. David E. Boufford, Harvard University Herbaria, Cambridge, MA 02138-2020, USA

Dr. Ritesh Kumar Choudhary, Agharkar Research Institute, Pune, Maharashtra, India

Dr. A.G. Pandurangan, Thiruvananthapuram, Kerala, India

Dr. Navendu Page, Wildlife Institute of India, Chandrabani, Dehradun, Uttarakhand, India

Dr. Kannan C.S. Warriar, Institute of Forest Genetics and Tree Breeding, Tamil Nadu, India

Invertebrates

Dr. R.K. Avasthi, Rohtak University, Haryana, India

Dr. D.B. Bastawade, Maharashtra, India

Dr. Partha Pratim Bhattacharjee, Tripura University, Suryamaninagar, India

Dr. Kailash Chandra, Zoological Survey of India, Jabalpur, Madhya Pradesh, India

Dr. Ansie Dippenaar-Schoeman, University of Pretoria, Queenswood, South Africa

Dr. Rory Dow, National Museum of Natural History Naturalis, The Netherlands

Dr. Brian Fisher, California Academy of Sciences, USA

Dr. Richard Gallon, Llandudno, North Wales, LL30 1UP

Dr. Hemant V. Ghate, Modern College, Pune, India

Dr. M. Monwar Hossain, Jahangirnagar University, Dhaka, Bangladesh

For Focus, Scope, Aims, and Policies, visit https://threatenedtaxa.org/index.php/JoTT/aims_scope

For Article Submission Guidelines, visit <https://threatenedtaxa.org/index.php/JoTT/about/submissions>

For Policies against Scientific Misconduct, visit https://threatenedtaxa.org/index.php/JoTT/policies_various

continued on the back inside cover

Cover: A mesmerising Indian Luna moth *Actias selene* is dancing through the starry night (by Vincent van Gogh) moonlit sky, displaying its ballistic display of feather tail.
Digital artwork by Vyshnavee Sneha Jaijar.

INTRODUCTION

One of the globally biggest families is the Araceae (Moodley et al. 2016; Bulawin et al. 2024), and one of the largest genera of the family Araceae is *Amorphophallus* (Claudel 2021; Bulawin et al. 2024). About 241 accepted species of *Amorphophallus* are distributed worldwide (IPNI 2022; GBIF 2022; WCVF 2022; Bulawin et al. 2022–2024), and 70% of species can be found in southeastern Asia (Claudel et al. 2019). Most species are limited, and only a few are distributed over a large area (Grob et al. 2003). *Amorphophallus* species are native in southern and southeastern Asia, northern Australia & Oceania, China, Taiwan, Bangladesh, India, Sri Lanka, Laos, Burma, Thailand, Vietnam, Borneo Island, Java Island, Malaysia, Philippines, Celebes Island, Sumatra, New Guinea, Fiji, and Samoa extending from tropical and subtropical climates (Sivilla & Santos 2021).

Amorphophallus is derived from the Greek word *amorphous* which means deformed, and *phallus* meaning penis (Yuzammi 2009). Most parts of the plant manifest varied and unique appearances, one of which is the plant's height (Claudel et al. 2017). *Amorphophallus* is well known for its colossal flowers and decaying flesh odor (Liu et al. 2017). The colorful spathe of the inflorescence is essential for breeding and laying eggs of the insects (Ulrich et al. 2016). The spadix at the center of the flower emits heat and odor that entices pollinators (Diaz & Kite 2006; Barthlott et al. 2009). The essential part of the flower is the appendix, an organ that draws the attention of insects for pollination (Chartier & Gibernau 2009). The tuber is the underground stem that serves as a storage organ and for plant propagation. *Amorphophallus* plant commonly grows with an individual leaf (Mc Pherson & Hetterscheid 2011), and the lamina has elliptical leaflets with acute to acuminate apex, similar to the leaves of young trees, and a lichen-like pattern covers the petiole (Claudel et al. 2019). The conspicuous characteristics of *Amorphophallus* that can be readily identified are the mark arrangement or pattern and the shade of the petiole (Gustini et al. 2017).

In the Philippines, India, Sri Lanka, and other southeastern Asian countries, *Amorphophallus* is used for human consumption, not only as an ornamental plant (Sivilla & Santos 2021), but also for medicinal purposes. Tubers, young branches, and inflorescence are the parts of *Amorphophallus* that are edible, and can be used in traditional healing (Anil et al. 2011; Phornvillay et al. 2015; Mastuti et al. 2018; Sookchaloem et al. 2018). *Amorphophallus* was a secondary food source,

next to rice, and was utilized in land-clearing ceremonies as an offering of food in some countries (Mursyidin et al. 2022). It is also used in making chips (Misra et al. 2010) and pasta (Chua et al. 2010). Essential parts of plants can be utilized as a source of medicine and food ingredients (Rivai et al. 2022). Traditionally, it has been used as an herbal medicine due to its medicinal properties (Sharma et al. 2022).

The contemporary inventory of accepted *Amorphophallus* species with scientific names, number of occurrences, countries, conservation & distribution status, ecological habitat, and biogeography is introduced in this world checklist. This study utilized digital databases to have a general checklist of *Amorphophallus*, distribution, and conservation status globally. Through this checklist, the different accepted species of *Amorphophallus* worldwide, the countries where the species were found, conservation status, habitat, and biogeography regions where the species were distributed are identified. This study will serve as a basic standard of information regarding the genus diversity, distribution, and global conservation to improve strategic management, and a sustainable plan.

MATERIALS AND METHODS

Knowledge about the ecology, characteristics, and habitats of most plants is limited or nonexistent. The plant's global databases help address some of the plant's growth forms (Taseski et al. 2019). This study provides a worldwide inventory of the accepted species of *Amorphophallus*, covered countries, conservation & distribution status, ecological habitat, and biogeographic regions (Table 3). All the acquired information on *Amorphophallus* species came from digital articles, online herbaria (Table 2) (Internet Directory for Botany 2022; NYBG 2022), and public access databases on biodiversity (Table 1) (Pelser et al. 2011 onwards; CATE Araceae 2022; GBIF 2022; IAS 2022; IPNI 2022; POWO 2022; Tropicos 2022; WCSP 2022; WCVF 2022; WFO 2022). Only the taxonomically accepted species of *Amorphophallus* were included in this paper. The checklist did not include synonyms and varieties. The well-known online international system, open access that provides a database for plant biodiversity is the Global Biodiversity Information Facility (GBIF) (Reyserhove et al. 2020). The scientific names of accepted species of *Amorphophallus* were obtained from the GBIF (2022) and cross-checked against the World Checklist of Vascular Plants (WCVF 2022), International



Image 1. The biogeographic realms of the world (Olson et al. 2001) used in the study of *Amorphophallus* species (Source: www.scribblemaps.com).

Plant Names Index (IPNI 2022), and other online herbaria. Also, the number of occurrences, covered countries, biogeographic regions, and conservation status were added in the analysis. The information on distribution and ecological status of *Amorphophallus* species was acquired from the Plant of the World Online (POWO 2022), International Plant Names Index (IPNI 2022), and online herbaria worldwide. In this checklist, various online herbaria, biodiversity databases, and protologues were also utilized to verify the information of *Amorphophallus* species.

The status of occurrences was zero when a survey of a taxon at a specific time and place encountered no specimens. The NR abbreviation was used for no record occurrences based on online herbarium databases. Covered countries were documented by using ISO 3166-1 alpha-2 code (https://www.nationsonline.org/oneworld/country_code_list.htm). These countries where the various species of *Amorphophallus* were found aligned according to the counterpart biogeographic regions (Image 1), such as Neotropical—NE, Nearctic—NT, Afrotropical—AT, Palearctic—PA, Australasia—AS, and Indo-Malay—IM (Olson et al. 2001). On the one hand, the detailed conservation status was according to the IUCN Global Red List Category. The following abbreviation was used for the conservation status

of *Amorphophallus* species: UA—Unassessed, DD—Data Deficient, LC—Least Concern, NT—Near Threatened, VU—Vulnerable, EN—Endangered, and CR—Critically Endangered. For those *Amorphophallus* species without a record, the NR abbreviation was used. Information about the distribution status of *Amorphophallus* species used the abbreviation EC for endemic *Amorphophallus* and NA for native species of *Amorphophallus*. The ecological habitat of various species of *Amorphophallus* were indicated (Figure 7), and those *Amorphophallus* species with unknown ecological habitat or no record based on online herbarium databases were given the abbreviation UK.

RESULTS AND DISCUSSION

Out of 241 species of *Amorphophallus* worldwide (Table 3) (Bulawin et al. 2022–2024), around 7,463 total occurrences of *Amorphophallus* species were recorded in global databases from different countries. Other countries had zero occurrences due to the absence of encountered specimens when a survey of a taxon at a specific time and place was conducted, and some species had no record in global databases. The species with the highest occurrences were

Table 1. Databases used for a worldwide checklist of *Amorphophallus* species.

Database	Webpage URL
CATE Araceae	https://cate-araceae.myspecies.info/
Co's Digital Flora of the Philippines	https://www.philippineplants.org/
Global Biodiversity Information Facility (GBIF)	https://www.gbif.org/
International Aroid Society	https://www.aroid.org/
International Plant Names Index (IPNI)	https://www.ipni.org/
World Checklist of Selected Plant Families (WCSP)	https://wcsp.science.kew.org/home.do
Plants of the World Online (POWO)	https://powo.science.kew.org/
The World Flora Online (WFO)	https://www.worldfloraonline.org/
Tropicos	https://www.tropicos.org/home
World Checklist of Vascular Plants (WCVP)	https://wcvp.science.kew.org/taxon/979828-1

A. paeoniifolius (12.31%), *A. abyssinicus* (10.49%), *A. baumannii* (5.21%), *A. dracontiodes* (4.98%), *A. konjac* (4.66%), *A. galbra* (4.45%), *A. aphyllus* (3.95%), *A. titanium* (2.99%), and *A. variabilis* (2.33%). *Amorphophallus paeoniifolius* had the highest occurrences of all the species of *Amorphophallus*, which was known for its geographical extent. This species can be cultivated in many regions, including southeastern Asia (Gao et al. 2017; Bulawin et al. 2022). Most of the species with highest occurrences could be found in the following countries: Nigeria, Togo, Indonesia, Burkina Faso, Guinea, United States, and Belgium in Afrotropic, Indo-Malay, Nearctic, and Palearctic regions (Image 1). Table 3 presents the worldwide checklist of *Amorphophallus* species based on digital databases and herbarium records.

There were various accepted species of *Amorphophallus* from different countries worldwide. The most species-rich country based on the record of digital databases was Thailand with (66 species), followed by France (39 species), Vietnam (34 species), United States (34 species), Indonesia (32 species), Malaysia (30 species), Laos (28 species), India (22 species), Philippines (21 species), and China (18 species) (Figure 2). Manifesting distinct habitats for the diversity and bioresources of the species (Sungkajanttranon et al. 2018) made Thailand the most species-rich country of *Amorphophallus* species. Figure 3 presents the number of *Amorphophallus* species by country based on online herbarium and databases.

The generally recognized and accepted assessment criteria to identify the condition of the species for

Table 2. Herbaria used for the confirmation of *Amorphophallus* species [NYBG Steere Herbarium (2022) | Internet Directory for Botany (2022)].

Institution	Location	Herbarium code
Adelaide Botanic Garden	Australia	AD
Berlin-Dahlem Botanical Garden	Germany	B
Bonn Botanic Garden	Germany	BONN
Botanic Garden of Marburg University	Germany	MB
Calicut University Botanical Garden	India	CALI
Chinese National Herbarium	China	PE
Fairchild Tropical Botanic Garden	USA	FTG
Forest Herbarium	Thailand	BKF
Gothenburg Botanical Garden	Sweden	GB
Hamburg Botanical Garden	Germany	HBG
Herbarium Bandungense Jurusan Biologi	Indonesia	ITB
Herbarium Bogoriense	Indonesia	BO
Herbarium, Institute of Botany, Academia Sinica, Taipei	Taiwan	HAST
Herbarium Universiti of Kebangsaan	Malaysia	UKMB
Huntington Botanical Gardens	California	HNT
Institute of Tropical Biology	Vietnam	VNM
Leiden Botanic Garden	Netherlands	L
Missouri Botanic Garden	USA	MO
National Herbarium of the Netherlands or Herbarium Hamburgense	Netherlands	HBG
National Taiwan University Herbarium	Taiwan	TAI
Royal Botanic Garden	Australia	K
Saint Petersburg University	Russia	LECB
Shivaji University	India	SUK
Wageningen Herbarium	Netherlands	WAG

conservation design are the IUCN Red List of Threatened Species (Yudaputra et al. 2022). Based on the digital databases, 76.35% of *Amorphophallus* species were unassessed for conservation status, and 13.70% have no record. Around 4.15% of *Amorphophallus* species globally are CR, 2.90% VU, 0.83% EN, 0.83% NT, 0.83% LC, and 0.83% DD (Figure 4). This result shows that *Amorphophallus* species are included in the list of protected flora (Wulandari et al. 2022) since some were Critically Endangered, Vulnerable, Endangered, and Near Threatened according to IUCN Red List Criteria (2022).

Native species occur naturally in a region; endemic species are native and restricted to a specific area (Dempsey 2022). Globally, 83% of *Amorphophallus* species were native, and 17% were endemic (Figure 5). Based on the record of digital databases, the 10 most countries with native species of

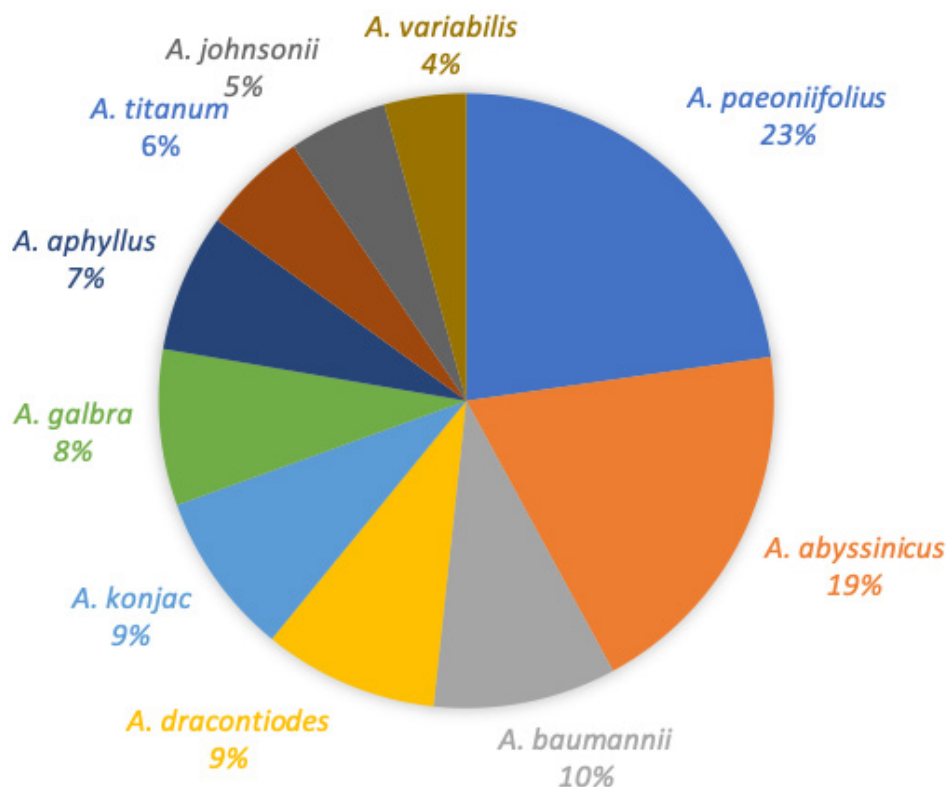


Figure 1. Species of *Amorphophallus* with higher number of occurrences.

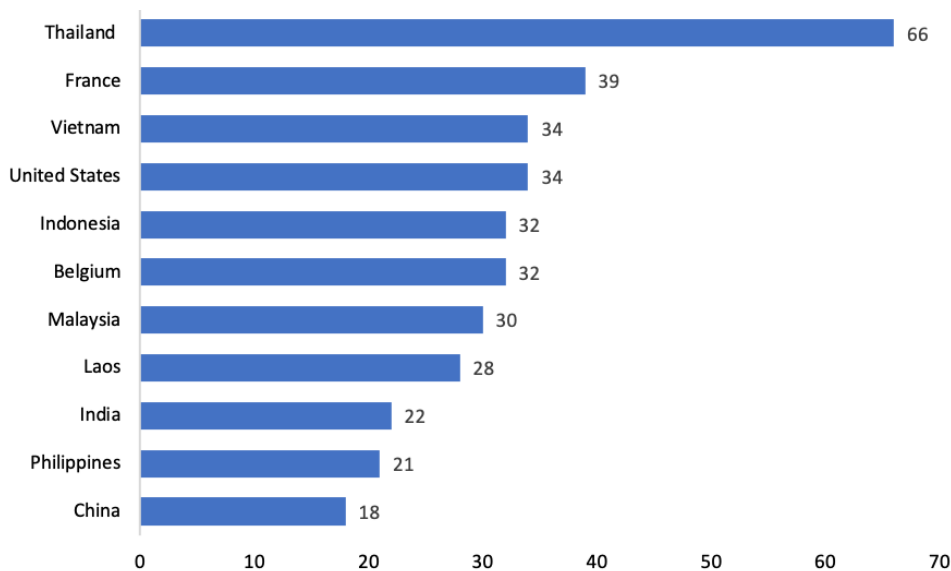


Figure 2. Countries with a higher number of *Amorphophallus* species.

Amorphophallus were Vietnam (35 species), followed by Malaysia (31 species), Laos (30 species), Thailand (27 species), Indonesia (24 species), India (21 species), China (16 species), Myanmar (13 species), Democratic Republic of Congo (10 species), and the Cambodia

(nine species). The 10 countries with endemic species of *Amorphophallus* were the following: Thailand (34 species), Philippines (20 species), Madagascar four species, Malaysia two species, Nigeria one species, Equatorial Guinea (one species), the Democratic

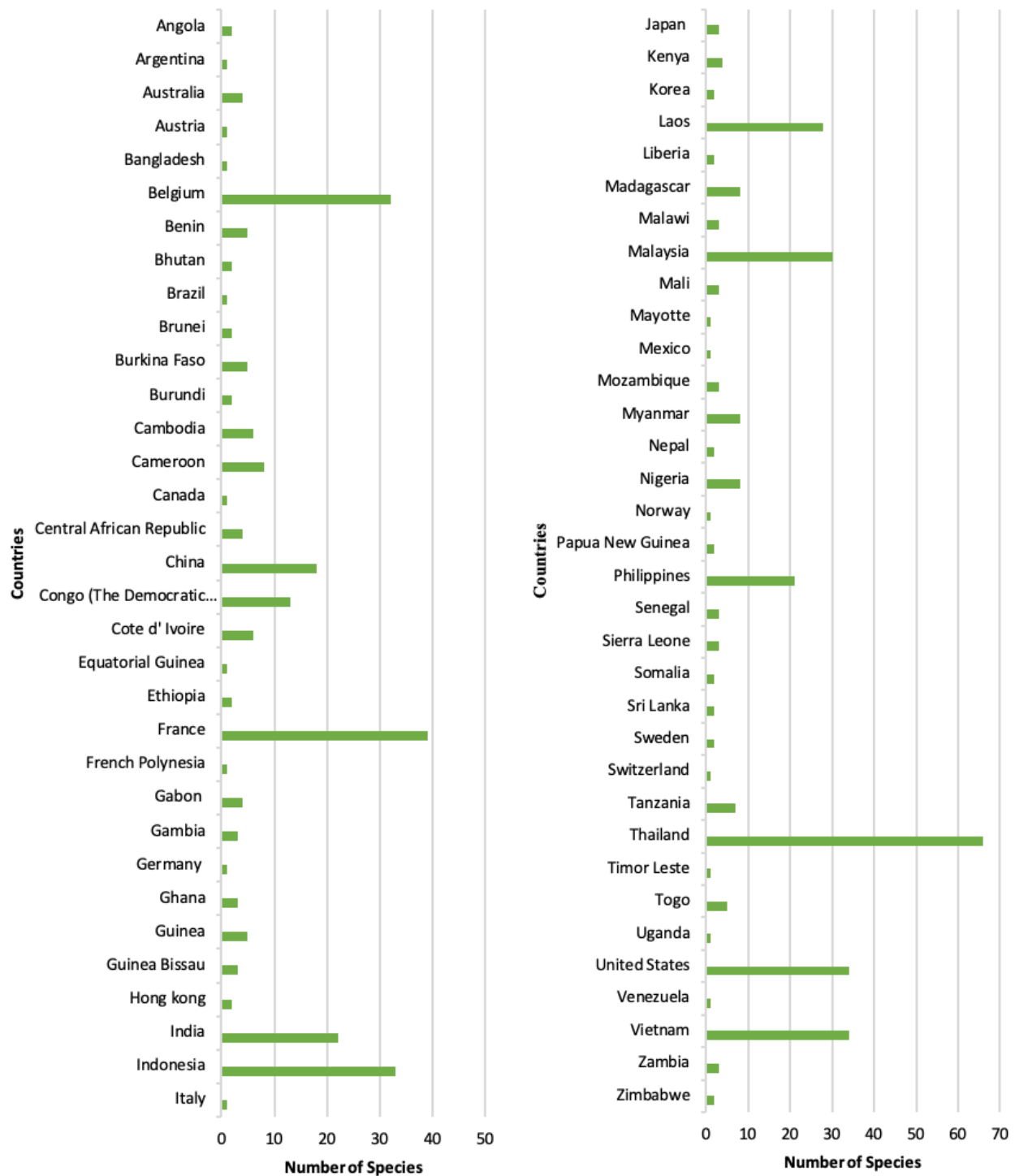


Figure 3. The number of *Amorphophallus* species by country based on online herbarium and databases.

Republic of Congo (one species), Cameroon (one species), Benin (one species), and Burundi (one species) (Figure 6). Most *Amorphophallus* had a broader extent of endemism because of a large scope of geographic adaptation that made it a diverse species (Anil et al. 2014).

Most of the ecological habitat of the *Amorphophallus* species was unknown based on digital databases, with 49.83% (Figure 7). Followed by others or different ecological habitats with 5.72%. Few of *Amorphophallus* species grown in limestone (9.76%), followed by deciduous forest (5.72%), savannah (4.04%), secondary

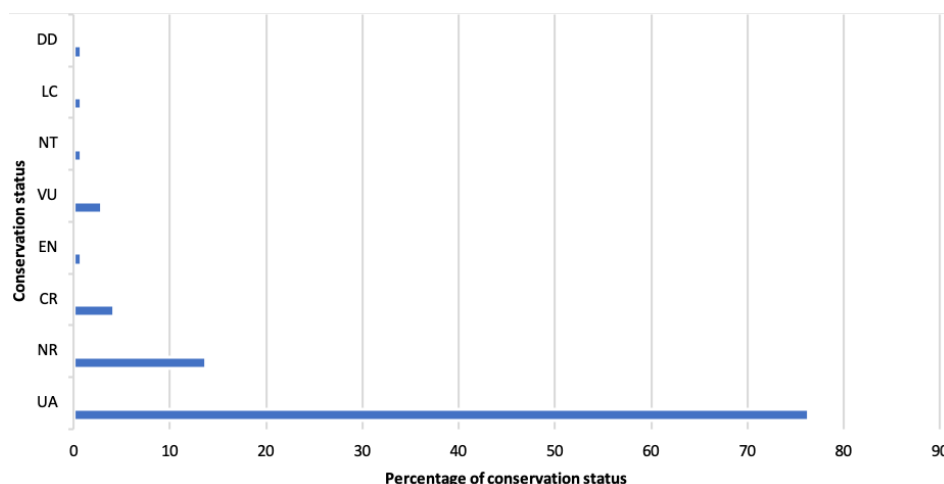


Figure 4. Conservation status of *Amorphophallus* species based on the International Union of Conservation of Nature (IUCN 2022).

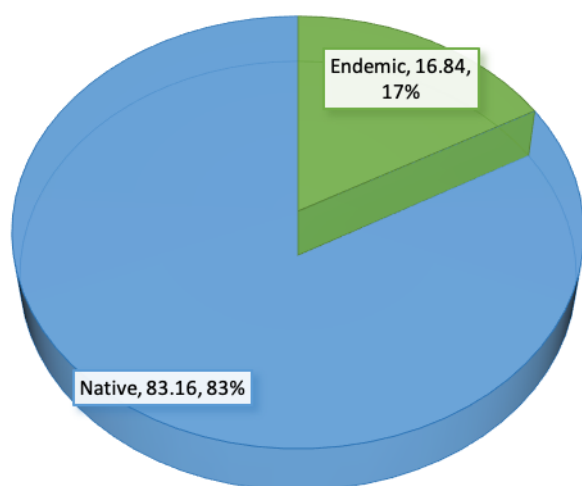


Figure 5. Percentage of *Amorphophallus* species distribution.

forest (3.70%), primary forest (3.03%), dipterocarp forest (2.69%), shady area (2.69%), under bamboo (1.35%), forest margin (1.35%), open forest (1.01%), open woodland (1.01%), lowland forest (1.01%), rich soil with added loam (0.67%), and low land (0.67%). Some species occur in limestone areas rich in decaying organic matter (Nguyen et al. 2016). Additionally, they are primarily found in secondary forests rather than primary forests, as they are considered pioneer species, and few have evolved in open fields (Liu et al. 2017).

Amorphophallus species are abundant in the biogeographical regions of Indo-Malay (56.65%), followed by the Palearctic (19.34%), the Afrotropics (11.85%), Nearctic (9.83%), Australasia (1.16%), and lastly the Neotropics (1.16%). No *Amorphophallus* species are distributed in Oceania and Antarctic biogeography regions. Indo-Malay includes those countries in southern,

southeastern Asia, and the southern part of eastern Asia. Most of the *Amorphophallus* species have been discovered in southeastern Asia (Bulawin et al. 2022), and this result suggests that *Amorphophallus* species were abundant in Indo-Malay biogeography.

Based on the occurrences, it appears that the genus *Amorphophallus* has lower occurrences than other genera in the family Araceae, such as *Anthurium*, *Arisaema*, *Arum*, *Caladium*, *Calocasia*, *Dieffenbachia*, *Monstera*, *Philodendron*, *Syngonium*, *Xanthosoma*, and *Zantedeschia*, especially when it is not in season. The development or maturity of *Amorphophallus* varies across different species, and it is a seasonal plant that undergoes an annual cycle of activity and dormancy (Mc Pherson & Hetterscheid 2011).

Besides, *Amorphophallus* species need an appropriate environmental condition to grow because several factors can affect their growth and distribution such as habitat type, altitude, light, humidity and temperature (Wulandari et al. 2022). These were the reasons why some species of *Amorphophallus* have zero or absence of occurrences in some other countries (Sungkajanttranon et al. 2018; Wulandari et al. 2022). *A. paeoniifolius* (Figure 1) had a higher percentage of occurrences because of its comestible tuber and medicinal properties (Anil et al. 2011). It is known for its geographical extent, as this species can be cultivated in many regions (Bulawin et al. 2022).

In describing the rate of biodiversity of a particular ecosystem, evaluation of plants, geographical distribution in terms of species richness, species evenness, endemism, and conservation status is fundamental (Batuyong et al. 2020). Out of 10 countries with a higher number of *Amorphophallus* species,

Table 3. Worldwide checklist of *Amorphophallus* species based on digital databases and herbarium records.

Species	Number of occurrences	Country	IUCN Red List status	Status of distribution	Ecological habitat	Biogeographic region
1. <i>A. aberrans</i> Hett.	5	TH, FR	UA	EC in TH	Dry savannah forest	IM, PA
2. <i>A. abyssinicus</i> (A.Rich.) N.E.Br.	783	BE, CD, BF, TZ, CI, CM, GN, NG, TG, CF	UA	NA to NG, BF, NE, TG, ZM, CM, NA, CF, TD, ET, ZA, TZ, UG, ZW	UK	PA, AT
3. <i>A. adamsensis</i> Magtoto, Mones, Ballada, Austria, R.M.Dizon, Alangui, Regina	NR	PH	NT	EC in PH	UK	IM
4. <i>A. albispathus</i> Hett.	17	TH, BE, MY, US	UA	EC in TH	Limestone	IM, PA, NT
5. <i>A. albus</i> P.Y.Liu & J.F.Chen	23	CN, FR, CH, BE, SE	UA	NA to CN	Open forest	PA
6. <i>A. allenii</i> A. Galloway, Malkm. Huss., Prehlsler & Claudel	0	TH	NR	NA to TH	UK	IM
7. <i>A. amygdaloides</i> Hett. & Sizemore	5	TH	UA	EC in TH	UK	IM
8. <i>A. andranogidroensis</i> Hett. & Mangelsdorff	2	MG	UA	EC in MG	Deciduous forest	AT
9. <i>A. angolensis</i> (Welw. ex. Schott) N.E.Br.	79	GA, CD, CF, AO, CN	UA	NA to AO, GA, SD, CD	UK	AT, PA
10. <i>A. angulatus</i> Hett. & A.Vogel	11	MY	UA	NA to Borneo	UK	IM
11. <i>A. angustispathus</i> Hett.	4	MM	UA	NA to MM	UK	IM
12. <i>A. ankarana</i> Hett. Ittenb. & Bogner	25	MG, BE, FR	UA	EC in MG	Limestone	AT, PA
13. <i>A. annulifer</i> Hett.	2	ID	UA	NA to Java	UK	IM
14. <i>A. antsingyensis</i> Bogner, Hett. & Ittenbach	27	MG	UA	EC in MG	Primary & secondary forest/ limestone	AT
15. <i>A. aphyllus</i> (Hook.) Hutch.	295	BJ, SN, GM, SL, GN, GW, ML, BE, TG, CI	UA	NA to BF, CF, TD, GW, ML, SN, SL, TG	Savannah/dry forest	AT, PA
16. <i>A. arcuspadix</i> A.Galloway, Ongsakul & Petra Schmidt	1	FR	UA	NA to LA	UK	PA
17. <i>A. ardii</i> Yuzammi & Hett.	NR	ID	NR	NA to Sulawesi	UK	IM
18. <i>A. asper</i> (Engl.) & Gehrm.	7	ID	UA	NA to Sumatra	UK	IM
19. <i>A. asterostigmatus</i> Bogner & Hett.	13	TH	UA	EC in TH	Limestone	IM
20. <i>A. atrorubens</i> Hett. & Sizemore	2	TH	UA	EC in TH	Limestone	IM
21. <i>A. atroviridis</i> Hett.	9	TH, BE	UA	EC in TH	Limestone	IM, PA
22. <i>A. bangkokensis</i> Gagnep	2	TH	UA	EC in TH	Low-lying waste ground	IM
23. <i>A. barbatus</i> A.Galloway & Ongsakul	0	LA	NR	NA to LA	UK	IM
24. <i>A. barthlottii</i> Ittenb. & Lobin	6	CI, LR	UA	NA to CI, LR	UK	AT
25. <i>A. baumannii</i> (Engl.) N.E.Br.	389	BE, GH, TG, SN, BF, NG, GW, SL, GM, NG	UA	NA to NG, BF, NE, NG, SN, SL, CF, TD, GM, GH, GW, LR, TG	Savannah/ open woodland/and stony soil	PA, AT
26. <i>A. beccarii</i> Engl.	26	ID, FR	UA	NA to Sumatera	UK	IM, PA
27. <i>A. bequaertii</i> De Wild.	4	CD	UA	EC in East CD	Primary forest	AT
28. <i>A. blumei</i> Schott, 1863	0	IN	NR	NR	UK	NR
29. <i>A. bognerianus</i> Sivad & Jaleel	2	IN	UA	NA to East Himalaya	UK	IM
30. <i>A. bolikhamxayensis</i> A.Galloway, Ongsakul & Petra Schmidt	1	FR	UA	NA to LA	UK	PA
31. <i>A. bonaccordensis</i> Sivad. & N.Mohanan	4	IN	UA	NA to IN	UK	IM
32. <i>A. borneensis</i> (Engl.) Engl. & Gehrm	18	MY, ID, BE, BN	UA	NA to Borneo	UK	IM, PA,
33. <i>A. boyceanus</i> Hett.	1	TH	UA	EC in TH	UK	IM
34. <i>A. brachyphyllus</i> Hett.	10	MY	UA	EC in Bau area, Kuching Div.	Lowland forest/ Limestone/ evergreen forest	IM
35. <i>A. brevipetiolatus</i> A.Galloway, Ongsakul & Petra Schmidt	0	LA	NR	NA to LA	UK	IM

Species	Number of occurrences	Country	IUCN Red List status	Status of distribution	Ecological habitat	Biogeographic region
36. <i>A. brevispathus</i> Gagnep.	11	TH	UA	EC in TH	Limestone	IM
37. <i>A. bubenensis</i> J.T.Yin & Hett.	0	CN	NR	NA to CN South Central	UK	PA
38. <i>A. bufo</i> Ridl.	7	MY	UA	NA to Malaya	UK	IM
39. <i>A. bulbifer</i> (Roxb.) Blume	161	IN, US, CN, TH, BE, FR, NP, BT, ID	UA	NA to IN, CN, BD, IN, MM, NP	UK	IM, NT, PA,
40. <i>A. calabaricus</i> N.E.Br.	34	CM, NG, BJ, CD, GA, UG	UA	NA to NG, CM, KE, UG, CP	UK	AT
41. <i>A. calcicola</i> Tamayo, M.N., Magtoto, Liezel, L.M., Sumalinog, M. JR., Reyes, T.D. Jr., Austria, C.M.	NR	PH	CR	EC in PH	Forest/limestone	IM
42. <i>A. canaliculatus</i> Ittenb., Hett. & Lobin	6	GA	UA	NA to GA	UK	AT
43. <i>A. candidissimus</i> X.Gong & H.Li	0	VN	NR	NA to VN	UK	IM
44. <i>A. carneus</i> Ridl.	9	MY, TH	UA	NA to MY, TH	Limestone	IM
45. <i>A. carnosus</i> Engl.	9	VN	UA	NA to VN	UK	IM
46. <i>A. caudatus</i> Bustamante, R.A.A., Mansibang, J.A., Hetterscheid, W.L.A., Tamayo, M.N.	NR	PH	CR	EC in PH	Low land forest	IM
47. <i>A. chlorospathus</i> Kurz ex Hook.f.	3	IN, MM	UA	NA to IN, MM	UK	IM
48. <i>A. cicatricifer</i> Hett.	6	TH	UA	EC in Kanchanaburi	Evergreen forest	IM
49. <i>A. cidarioides</i> J.R.Callado, Medecilo & Hett.	NR	PH	NR	EC in PH	Watery areas	IM
50. <i>A. cirrifer</i> Stapf.	9	TH	UA	EC in TH	Deciduous forest/ open forest	IM
51. <i>A. claudelii</i> A.Galloway & Ongsakul	1	FR	UA	NA to LA	UK	PA
52. <i>A. coaetaneus</i> S.V.Liu & S.J.Wei	18	VN, FR, CN, US	UA	NA to CN, VN	Forest valley	IM, PA, NT
53. <i>A. commutatus</i> (Schott) Engl.	56	IN	UA	NA to IN	UK	IM
54. <i>A. consimilis</i> Blume	80	SN, GM, BJ, ML, FR, GW, BE	UA	NA to GM, SN	Low land	AT, PA
55. <i>A. corrugatus</i> N.E.Br.	43	TH, US, VN	UA	NA to CN, MM, TH	Primary forest/ evergreen forest	IM, NT
56. <i>A. costatus</i> Hett.	5	MY, ID	UA	NA to Borneo	UK	IM
57. <i>A. coudercii</i> (Bogner) Bogner	5	KH, VN	UA	NA to KH	UK	IM
58. <i>A. crinitus</i> A.Galloway, Luu, Malkm.-Huss., Prehsler & Claudel	0	VN	NR	NA to VN	UK	IM
59. <i>A. crispifolius</i> A.Galloway, Ongsakul & Petra Schmidt	0	LA	NR	NA to LA	UK	IM
60. <i>A. croatii</i> Hett. & Galloway	2	LA	UA	NA to LA	UK	IM
61. <i>A. cruddasianus</i> Prain	5	MM, TH, US	UA	NA to MM, TH, LA	UK	IM, NT
62. <i>A. curvistylis</i> Hett.	7	TH	VU	EC in Kanchanaburi	Limestone/ deciduous forests	IM
63. <i>A. declinatus</i> Hett.	7	PH	UA	EC in PH	UK	IM
64. <i>A. decus-silvae</i> Backer & Alderw.	27	ID, US	UA	NA to Jawa	UK	IM, NT
65. <i>A. discophorus</i> Backer & Alderw.	5	ID	UA	NA to Jawa	UK	IM
66. <i>A. dracontoides</i> (Engl.) N.E.Br.	372	BJ, TG, CI, BF, GH, NG, GN	UA	NA to NG, BF, CF, GM, GH, CI, NE, TG	Dry savannah	AT
67. <i>A. dunnii</i> Tutchet	52	CN, HK, BE, DE, FR, US	UA	NA to CN	UK	IM, PA, NT
68. <i>A. dzui</i> Hett.	6	VN	UA	NA to VN	UK	IM
69. <i>A. eburneus</i> Bogner	23	MY	UA	EC in Padawan (Kuching Div.) and Tebedu (Samarahan Div.).	Lowland forest/ limestone	IM
70. <i>A. echinatus</i> Bogner & Mayo	3	TH, LA	DD	EC in Kanchanaburi	Dense, moist forest	IM
71. <i>A. eichleri</i> (Engl.) Hook.f.	24	BE, FR, CD, CF, BR, CM	UA	NA to CD	Primary rain forest	PA, AT, NE

Species	Number of occurrences	Country	IUCN Red List status	Status of distribution	Ecological habitat	Biogeographic region
72. <i>A. elatus</i> Hook.f.	9	TH, FR, MY	UA	NA to MY, TH	Evergreen forest/deciduous forest	IM, PA
73. <i>A. elegans</i> Ridl.	5	MY, TH	UA	NA to MY, TH	Evergreen forest/limestone	IM
74. <i>A. elliotii</i> Hook.f.	12	SL, TH	UA	NA to SL	Forest between low grass	AT, IM
75. <i>A. erythrorrhachis</i> Hett., Pronk & R.Kaufmann	3	MG	UA	NA to MG	UK	AT
76. <i>A. excentricus</i> Hett.	8	TH, US	UA	NA to MY, TH	Evergreen forest	IM, NT
77. <i>A. fallax</i> (Serebryanyi) Hett. & Claudel	6	VN, LA	UA	NA to VN	UK	IM
78. <i>A. ferruginosus</i> A.Galloway	0	LA	NR	NA to LA	UK	IM
79. <i>A. flammeus</i> M.A.Calamo, M.A.R. Batuyong, N.F.Bulawin, G.J.D.Alejandro	NR	PH	VU	EC to PH	Limestone forest thickets with loamy substrate	IM
80. <i>A. flotoi</i> (S.Y.Hu) Govaerts	67	TH, US, LA, FR, KH	UA	NA to KH, VN, LA, TH	UK	IM, NT, PA
81. <i>A. fontarumii</i> N.F.Bulawin, M.M.Medecilo-Guiang, G.J.D.Alejandro	NR	PH	CR	EC to PH	Limestone	IM
82. <i>A. forbesii</i> (Engl.) Engl. & Gehrm.	1	ID	UA	NA to Sumatra	UK	IM
83. <i>A. fornicatus</i> Hett., J.R.Collado & Wistuba	NR	PH	NR	EC to PH	Secondary forest	IM
84. <i>A. fuscus</i> Hett.	5	TH, BE	UA	NA to TH	Limestone	IM, PA
85. <i>A. galbra</i> F.M.Bailey	332	AU, PG, ID, US	UA	NA to PG, AU,	UK	AS, IM, NT
86. <i>A. gallaensis</i> (Engl.) N.E.Br.	14	KE, SO, IT, ET	UA	NA to KE, SO, ET	Dry Savannah/open woodland	AT, PA
87. <i>A. gallowayi</i> Hett.	4	FR, LA, VN	UA	NA to LA	UK	IM, PA
88. <i>A. gigas</i> Teijsm. & Binn.	39	ID, US	TD	NA to Sumatera	UK	IM, NT
89. <i>A. glaucophyllus</i> Hett. & Serebryanyi	0	TH	NR	EC in Kanchanaburi	UK	IM
90. <i>A. gliruoides</i> Engl.	1	TH	UA	NA to MM	UK	IM
91. <i>A. glossophyllus</i> Hett.	9	VN, FR	UA	NA to VN	UK	IM, PA
92. <i>A. goetzei</i> (Engl.) N.E.Br.	20	TZ, MW, MZ, CD	UA	NA to MZ, TZ, CD	Evergreen forest/River valleys	AT
93. <i>A. gombocianus</i> Pic. Serm.	24	ET, ZM	UA	NA to ET	Savannah/ open woodland/ forest margin/proximity of river	AT
94. <i>A. gracilior</i> Hutch.	3	NG, BJ	UA	EC in BJ, NG	Primary rain forest/swamps	AT
95. <i>A. gracilis</i> Engl.	2	ID	UA	NA to Sumatera	UK	IM
96. <i>A. haematospadix</i> Hook.f.	20	MY, FR, TH, US	UA	NA to MY, TH	Limestone	IM, PA, NT
97. <i>A. harmandii</i> Engl. & Gehrm	45	TH, KH, LA	UA	NA to KH, LA, TH, VN	Deciduous forest/ under bamboo	IM
98. <i>A. hayi</i> Hett.	1	VN	DD	NA to VN, CN	Secondary forest	IM
99. <i>A. hemicyptus</i> Hett. & J.F.Maxwell	0	KH	NR	NA to KH	Deciduous forest/ Hardwood forest/	IM
100. <i>A. henryi</i> N.E.Br.	172	TH, CN, AR, BE, US	UA	NA to TH	Limestone/mixed forest/bamboo plantation	IM, PA, NE, NT
101. <i>A. hetterscheidii</i> Ittenb. & Lobin	3	CD, CF	UA	NA to CF, GA, CD	UK	AT
102. <i>A. hewittii</i> Alderw.	66	MY, ID	UA	NA to Borneo	UK	IM
103. <i>A. hildebrandtii</i> (Engl.) Engl. & Gehrm	104	MG	LC	NA to MG	UK	AT
104. <i>A. hirsutus</i> Teijsm. & Binn.	9	ID, IN, FR	UA	NA to Sumatera	UK	IM, PA
105. <i>A. hirtus</i> N.E.Br.	73	TH, CN, JP	UA	NA to TH	Dense grassland	IM, PA
106. <i>A. hohenackeri</i> (Schott) Engl. & Gehrm.	30	IN	UA	NA to IN	UK	IM
107. <i>A. hottae</i> Bogner & Hett.	12	MY	UA	NA to Borneo	UK	IM

Species	Number of occurrences	Country	IUCN Red List status	Status of distribution	Ecological habitat	Biogeographic region
108. <i>A. impressus</i> Ittenb.	10	MW, TZ, BE	UA	NA to MW, TZ	UK	AT, PA
109. <i>A. incurvatus</i> Alderw.	0	ID	NR	NA to Sumatera	UK	IM
110. <i>A. infundibuliformis</i> Hett., A. Dearden & A. Vogel	10	MY	UA	NA to Borneo	Lowland/ dipterocarp	IM
111. <i>A. interruptus</i> Engl. & Gehrm.	39	VN	CR	NA to VN	UK	IM
112. <i>A. johnsonii</i> N.E.Br.	210	GH, CI, BF, BN, ML, NG, LR, TG, GN, CM	UA	NA to NG, BF, GH, PG, CI, LR, ML	Savannah	AT, IM
113. <i>A. josefbogneri</i> Hett.	1	TH	UA	EC in South Western Thailand: Kanchanaburi	UK	IM
114. <i>A. julaiihii</i> Ipor, Tawan & P.C. Boyce	3	MY	UA	NA to Borneo	UK	IM
115. <i>A. juliae</i> P.C. Boyce & Hett.	0	MY	NR	EC to Sarawak	UK	IM
116. <i>A. kachinensis</i> Engl. Gehrm.	22	CN, MM, TH, LA	UA	NA to CN, LA, MM, TH	Limestone	PA, IM
117. <i>A. khammouanensis</i> A. Galloway	0	LA	NR	NA to LA	UK	IM
118. <i>A. kienluongensis</i> V.D. Nguyen, Luu & Hett.	0	VN	VU	NA to VN	UK	IM
119. <i>A. kiusianus</i> (Makino) Makino	130	JP, CN, HK, US, BE, KR	VU	NA to CN, JP, TW	UK	PA, IM, NT
120. <i>A. konjac</i> K. Koch	348	CN, US, JP, MX, PH, NO, KR, FR, AT	UA	NA to CN	Forest margin/ secondary forest	PA, NT, NE, IM
121. <i>A. konkanensis</i> Hett., S.R. Yadav & K.S. Patil	7	IN	UA	NA to IN	UK	IM
122. <i>A. koratensis</i> Gagnep	18	LA, TH, KH	UA	NA to KH, LA, TH	Deciduous/ dipterocarp forest	IM
123. <i>A. krausei</i> Engl.	93	TH, MM, FR, LA	UA	NA to BD, CN, LA, MM, TH	Deciduous/ dipterocarp forest/ Evergreen forest	IM, PA
124. <i>A. kuznetsovii</i> (Serebryanyi) Hett. & Claudel	1	VN	UA	NA to VN	UK	IM
125. <i>A. lacourii</i> Linden & André	120	TH, VN, FR, US, KH, LA, AU, BE	UA	NA to KH, LA, TH, VN	UK	IM, PA, NT, AS
126. <i>A. lambii</i> Mayo & Widjaja	27	MY, FR, IN, BE, TH	UA	NA to Borneo	UK	IM, PA
127. <i>A. lanceolatus</i> (Serebryanyi) Hett. & Claudel	2	VN	UA	NA to VN	UK	IM
128. <i>A. lanuginosus</i> Hett.	3	VN	CR	NA to VN	UK	IM
129. <i>A. laoticus</i> Hett.	9	LA	UA	NA to LA	Evergreen/ deciduous forest	IM
130. <i>A. lewallei</i> Malaisse & Bamps	11	BI, VE	CR	EC in Burundi	Savannah	AT, NE
131. <i>A. linearis</i> Gagnep	12	TH	UA	EC in TH	Evergreen/ deciduous/ dipterocarp forest/ bamboo forest	IM
132. <i>A. linguiformis</i> Hett.	3	ID	UA	NA to Borneo	UK	IM
133. <i>A. longicomus</i> Hett. & Serebryanyi	1	VN	UA	NA to VN	UK	IM
134. <i>A. longiconnectivus</i> Bogner	8	IN	UA	NA to IN	UK	IM
135. <i>A. longispathaceus</i> Engl. & Gehrm	3	PH	UA	EC in PH	UK	IM
136. <i>A. longistylus</i> Kurz ex Hook.f.	2	IN	UA	NA to Andaman Is.	UK	IM
137. <i>A. longituberosus</i> (Engl.) Engl. & Gehrm	52	TH, MY, FR, BE	UA	NA to BD, TH, MY	Evergreen/ Deciduous/ Dipterocarp forests	IM, PA
138. <i>A. lunatus</i> Hett. & Sizemore	2	TH	UA	EC in TH	Secondary forest	IM
139. <i>A. luzoniensis</i> Merr.	6	PH	UA	EC in PH	UK	IM
140. <i>A. lyratus</i> (Roxb.) Kunth	0	IN	NR	NA to IN	UK	IM
141. <i>A. macrophyllus</i> (Gagnep. ex Serebryanyi) Hett. & Claudel	7	TH, FR, VN	UA	NA to TH, VN	UK	IM, PA

Species	Number of occurrences	Country	IUCN Red List status	Status of distribution	Ecological habitat	Biogeographic region
142. <i>A. macrorhizus</i> Craib	58	TH, CN	UA	EC in TH	Deciduous/ Dipterocarp forests	IM, PA
143. <i>A. malkmus-husseinii</i> A.Galloway, Prehlsler & Claudel	0	LA	NR	NA to LA	UK	IM
144. <i>A. mangelsdorffii</i> Bogner	8	MG, BE	UA	NA to MG	UK	AT, PA
145. <i>A. manta</i> Hett. & Ittenbach	3	ID	UA	NA to Malaya and Sumatera	UK	IM
146. <i>A. margaritifera</i> (Roxb.) Kunth	24	IN	UA	NA to IN, BD, MM	UK	IM
147. <i>A. margretae</i> Ittenb.	1	CD	UA	NA to CD	UK	AT
148. <i>A. maximus</i> (Engl.) N.E.Br.	41	TZ, SO, KE, MZ, ZW, BE, CM, MW	UA	NA to KE, MZ, SO, TZ, ZW	UK	AT, PA
149. <i>A. maxwellii</i> Hett.	11	TH, BE	UA	EC in Kanchanaburi	Deciduous forest/ limestone	IM, PA
150. <i>A. mekongensis</i> Engl. & Gehrm.	6	LA, VN	UA	NA to LA, VN	UK	IM
151. <i>A. merrillii</i> K.Krause	3	PH	UA	EC in PH	UK	IM
152. <i>A. mildbraedii</i> K.Krause	5	CM	UA	NA to CM	UK	AT
153. <i>A. minimus</i> Bustamante, R.A.A., Claudel, C., Altomonte, J.C.A., Udasco, L.C. Jr., Tamayo, M.N.	NR	PH	CR	EC in PH	Montane / dipterocarp/ secondary forests	IM
154. <i>A. minor</i> Ridl.	2	MY	UA	NA to MY	UK	IM
155. <i>A. mossambicensis</i> (Schott ex Garcke) N.E.Br.	10	ZM, TZ, MZ, CD, US, ZW	UA	NA to MZ, TZ, ZM, CD, ZW	Savannah	AT, NT
156. <i>A. muelleri</i> Blume	106	TH, ID, IN, MM, MY, FR, US, TL	UA	NA to IN, TH, ID, MY, BN, MM	Secondary forests	IM, PA, NT
157. <i>A. mullendersii</i> Malaisse & Bamps	5	CD	UA	NA to AO, CD	Savannah/ Gallery forests	AT
158. <i>A. myosuroides</i> Hett. & A.Galloway	4	LA, BE, FR	UA	NA to LA	UK	IM, PA
159. <i>A. mysorensis</i> E.Barnes & C.E.C. Fisch.	11	IN	UA	NA to IN	UK	IM
160. <i>A. napalensis</i> (Wall.) Bogner & Mayo	49	IN, NP, TH, BT, BD, BE, US	UA	NA to IN BD, NP	UK	IM, PA, NT
161. <i>A. napiger</i> Gagnep.	15	TH, LA	UA	NA to KH, LA, TH, VN	Deciduous forests	IM
162. <i>A. natolii</i> Hett., Wistuba, V.B.Amoroso, Medecilo & Claudel	NR	PH	CR	EC in PH	Limestone	IM
163. <i>A. niahensis</i> P. C. Boyce & Hett.	4	MY	UA	NA to Borneo	Limestone/shady area	IM
164. <i>A. nicolaii</i> Hett.	0	VN	NR	NA to VN	UK	IM
165. <i>A. nicolsonianus</i> Sivadasan	11	IN	UA	NA to IN	UK	IM
166. <i>A. obovoideus</i> Alderw.	0	ID	NR	NA to Sumatera	UK	IM
167. <i>A. obscurus</i> Hett. & Sizemore	4	TH	UA	EC in Ubon Ratchathani	UK	IM
168. <i>A. ochroleucus</i> Hett. & V.D.Nguyen	8	FR, VN	NT	NA to VN	UK	PA, IM
169. <i>A. oncophyllus</i> Prain ex Hook.f.	0	CN	NR	NA to Andaman Is.	UK	PA
170. <i>A. ongsakulii</i> Hett. & A.Galloway	6	LA, FR, BE	UA	NA to LA	UK	IM, PA
171. <i>A. operculatus</i> Hett. & Sizemore	8	FR, TH	UA	EC in Chumphon	UK	PA, IM
172. <i>A. opertus</i> Hett.	1	VN	UA	NA to VN	UK	IM
173. <i>A. paeoniifolius</i> (Dennst.) Nicolson	919	AU, IN, ID, PH, TH, PF, PG, YT, CN	LC/UA	NA to IN, BD, MY, ID, CN, LA, KH, MM, PH	Secondary forest/ shady places	AS, IM, AT, PA
174. <i>A. palawanensis</i> Bogner & Hett.	21	PH	CR	EC to PH	Rich soil with added loam	IM
175. <i>A. paucisectus</i> Alderw.	2	ID	UA	NA to Sumatera	UK	IM
176. <i>A. pendulus</i> Bogner & Mayo	18	MY, ID	UA	NA to Borneo	UK	IM
177. <i>A. perakensis</i> Engl.	2	MY	UA	NA to Malaya	UK	IM
178. <i>A. perrieri</i> Hett. & Wahlert	16	MG, US	UA	NA to MG	Semi-deciduous forest	AT, NT

Species	Number of occurrences	Country	IUCN Red List status	Status of distribution	Ecological habitat	Biogeographic region
179. <i>A. pilosus</i> Hett.	6	VN	UA	NA to VN	UK	IM
180. <i>A. plicatus</i> Bok & H.J.Lam	3	ID	UA	NA to Sulawesi	UK	IM
181. <i>A. polyanthus</i> Hett. & Sizemore	6	TH, US	UA	NA to TH	Deep shade, near base of rocky outcrop	IM, NT
182. <i>A. prainii</i> Hook. f.	53	MY, TH, US, ID, BE, IN	UA	NA to LA, MY, TH, Sumatera	Evergreen forest/ Limestone	IM, NT, PA
183. <i>A. preussii</i> (Engl.) N.E.Br.	30	CM	VU	EC in CM	Primary shady forests	AT
184. <i>A. prolificus</i> Hett. & Galloway	3	TH	UA	EC in Central TH	UK	IM
185. <i>A. pulchellus</i> Hett. & Schuit	0	LA	NR	NA to Laos	Limestone	IM
186. <i>A. purpurascens</i> Kurz ex Hook.f.	8	MM	UA	NA to MM	UK	IM
187. <i>A. pusillus</i> Hett. & Serebryanyi	6	VN	UA	NA to VN	UK	IM
188. <i>A. putii</i> Gagnep	17	TH, MM, US	UA	NA to MM, TH	Evergreen forests/ Shaded places	IM, NT
189. <i>A. pygmaeus</i> Hett.	13	TH, US	UA	EC in Prachuap Khiri Khan	Limestone	IM, NT
190. <i>A. ranchanensis</i> Ipor, A.Simon & Meekiong	4	MY	UA	NA to Borneo	UK	IM
191. <i>A. ravenii</i> V.D.Nguyen & Hett.	0	LA	NR	NA to LA	UK	IM
192. <i>A. rayongii</i> Hett. & Medecilo	NR	PH	NR	EC in PH	Near the beach	IM
193. <i>A. reflexus</i> Hett. & A.Galloway	3	TH	UA	EC in Khampaeng Phet.	Limestone	IM
194. <i>A. rhizomatosus</i> Hett.	8	LA, GQ, GA, GN, NG	UA	NA to LA, VN	UK	IM, AT
195. <i>A. richardsiae</i> Ittenb.	4	ZM	UA	NA to ZM	UK	AT
196. <i>A. rostratus</i> Hett.	1	PH	UA	EC to PH	Secondary forest	IM
197. <i>A. rugosus</i> Hett. & A.L. Lamb	0	MY	NR	NA to Borneo	UK	IM
198. <i>A. sagittarius</i> Steenis	3	ID	UA	NA to Jawa	UK	IM
199. <i>A. salmoneus</i> Hett.	5	PH	UA	EC in PH	Limestone	IM
200. <i>A. saraburensis</i> Gagnep	1	TH	UA	EC in Saraburi	Monsoonal savannah	IM
201. <i>A. saururus</i> Hett.	5	FR, TH, US	UA	EC in N. E. TH Loei	UK	PA, IM, NT
202. <i>A. scaber</i> Serebryanyi & Hett.	6	VN, LA	UA	NA to VN	UK	IM
203. <i>A. schmidtiae</i> Hett. & A.Galloway	1	LA	UA	NA to LA	UK	IM
204. <i>A. scutatus</i> Hett. & T.C. Chapm.	4	TH	UA	EC in Phetchabun	UK	IM
205. <i>A. serrulatus</i> Hett. & A.Galloway	1	TH	UA	EC in Northern Thailand	UK	IM
206. <i>A. shyamsalilianus</i> J.V.Gadpay., Somkuwar & A.A.Chaturv.	0	IN	NR	NA in IN	UK	IM
207. <i>A. sinuatus</i> Hett. & V.D.Nguyen	2	FR, VN	UA	NA to VN	UK	PA, IM
208. <i>A. sizemoreae</i> Hett.	3	TH, US	UA	EC in Nakhon Sawan	UK	IM, NT
209. <i>A. smithsonianus</i> Sivadasan	11	IN	UA	NA to IN	UK	IM
210. <i>A. sparsiflorus</i> Hook.f.	3	MY	UA	NA to Malaya	UK	IM
211. <i>A. spectabilis</i> (Miq.) Engl.	11	ID	UA	NA to Jawa	UK	IM
212. <i>A. staudtii</i> (Engl.) N.E.Br.	23	CM, CI	UA	NA to CM, CD	Primary rainforest/ shaded rich soils	AT
213. <i>A. stuhlmannii</i> (Engl.) Engl. & Gehrm	46	TZ, CD, KE	UA	NA to KE, TL, CD	UK	AT
214. <i>A. subcymbiformis</i> Alderw.	1	ID	UA	NA to Sumatera	UK	IM
215. <i>A. sumawongii</i> (Bogner) Bogner & Mayo	25	TH, FR, BE, US	UA	EC in Sa Ksaao, Wathana Nakhon	Dry dipterocarp forest	IM, PA, NT
216. <i>A. suwidjianus</i> Ipor, Tawan & Meekiong	0	ID	NR	NA to Borneo	UK	IM
217. <i>A. sylvaticus</i> (Roxb.) Kunth	31	IN, LK	UA	NA to IN, LK	UK	IM

Species	Number of occurrences	Country	IUCN Red List status	Status of distribution	Ecological habitat	Biogeographic region
218. <i>A. symonianus</i> Hett. & Sizemore	14	FR, TH	UA	EC in Loei, Udon Thani	Limestone/medium shade	PA, IM
219. <i>A. synandrifer</i> Hett. & V.D.Nguyen	1	VN	CR	NA to VN	UK	IM
220. <i>A. taurostigma</i> Ittenb., Hett. & Bogner	43	MG, BE	VU	EC in MG	Shady humus pockets	AT, PA
221. <i>A. tenuispadix</i> Hett.	9	TH, FR, US	UA	EC in south western & Peninsular TH	Rocks at the foot of the hill	IM, PA, NT
222. <i>A. tenuistylis</i> Hett.	12	TH, US	UA	NA to KH, TH	Open mixed bamboo & deciduous forests/limestone	IM, NT
223. <i>A. terrestris</i> Hett & Claudel	0	TH	NR	NA to TH	UK	IM
224. <i>A. teuszii</i> (Engl.) Motte	11	CD, AO, LK	UA	NA to AO, CD	UK	AT, IM
225. <i>A. thaiensis</i> (S.Y.Hu) Hett.	18	FR, TH, US	UA	EC in Mae Hong Son	UK	PA, IM, NT
226. <i>A. tinekeae</i> Hett. & A.Vogel	5	MY	UA	NA to Borneo	UK	IM
227. <i>A. titanum</i> (Becc.) Becc.	223	AU, ID, US, BE, CA, SE	EN	NA to Sumatera	UK	AS, IM, NT, PA
228. <i>A. tonkinensis</i> Engl. & Gehrm	22	VN, LA	UA	NA to CN, VN	Dense tropical forests, moist, shaded places	IM
229. <i>A. tuberculatus</i> Hett. & V.D.Nguyen	7	BI	UA	NA to VN	UK	AT
230. <i>A. umbrinus</i> A.Galloway, Luu, Malkm. Huss., Prehlsler & Claudel	2	VN	UA	NA to VN	UK	IM
231. <i>A. urceolatus</i> Hett., A.Galloway & Medecilo	NR	PH	NR	EC in PH	Secondary forest/exposed places	IM
232. <i>A. variabilis</i> Blume	174	ID, CN, BE, US	UA	NA to Jawa, Sunda	UK	IM, PA, NT
233. <i>A. venustus</i> Hett., A.Hay & Mood	0	MY	NR	NA to Borneo	UK	IM
234. <i>A. verticillatus</i> Hett.	10	VN, FR, BE, US	VU	NA to VN	UK	IM, PA, NT
235. <i>A. villosus</i> A.Galloway, Luu, Malkm.-Huss., Prehlsler & Claudel	0	VN	NR	NA to VN	UK	IM
236. <i>A. vogelianus</i> Hett. & Billensteiner	2	FR	UA	EC to TH Chiang Mai	UK	PA
237. <i>A. xiei</i> H.Li & Z.L.Dao	4	CN	UA	NA to CN South Central	Forest margins/tropical thickets	PA
238. <i>A. yaoi</i> A. Galloway, Hett., & Medecilo	NR	PH	NR	EC in PH	Hilly shaded areas	IM
239. <i>A. yuloensis</i> H.Li	10	CN, FR, TH	UA	NA to CN, IN, MM	Dense primary evergreen valley forests/limestone	PA, IM
240. <i>A. yunnanensis</i> Engl.	111	TH, CN, US, VN, BE, LA, MM	UA	NA to CN, LA, TH, VN	Primary evergreen/Deciduous/secondary forest/forest Margin	IM, PA, NT
241. <i>A. zenkeri</i> (Engl.) N.E.Br.	28	CM	UA	EC in Guineo-Congolese region: Fernando Po	UK	AT

Occurrences: NR—no record | 0—no specimens encountered | Country names ISO 3166-1 alpha – 2 codes | IUCN status: UA—Unassessed | DD—Data Deficient | LC—Least Concern | NT—Near Threatened | VU—Vulnerable | EN—Endangered | CR—Critically Endangered | NR—No Record | Status of distribution: EC—Endemic | NA—Native | Ecological habitat: UK—Unknown | Biogeographic region: NE—Neotropic | NT—Nearctic | AT—Afrotropic | PA—Palearctic | AS—Australasia | IM—Indo-Malay. (Olson et al. 2001).

Thailand is the most species-rich country because of its suitable environment for its growth, which has tropical, and subtropical climates (Figure 2) (Sivilla & Santos 2021). Species richness of plants is greater in the herbaceous forest area compared to other forest zones (Mbuni et al. 2019).

Based on the record of the United Nations, over a

million species globally are at risk of extinction, and it was a discouraging report (Dapar et al. 2020). As a result of the climate crisis and anthropogenic activities, there is a consistently declining plant biodiversity (Onyancha et al. 2020; Pasta et al. 2020; Calaramo et al. 2022). IUCN Red List Criteria could assess the extinction risk (Yudaputra et al. 2022). It could figure out the

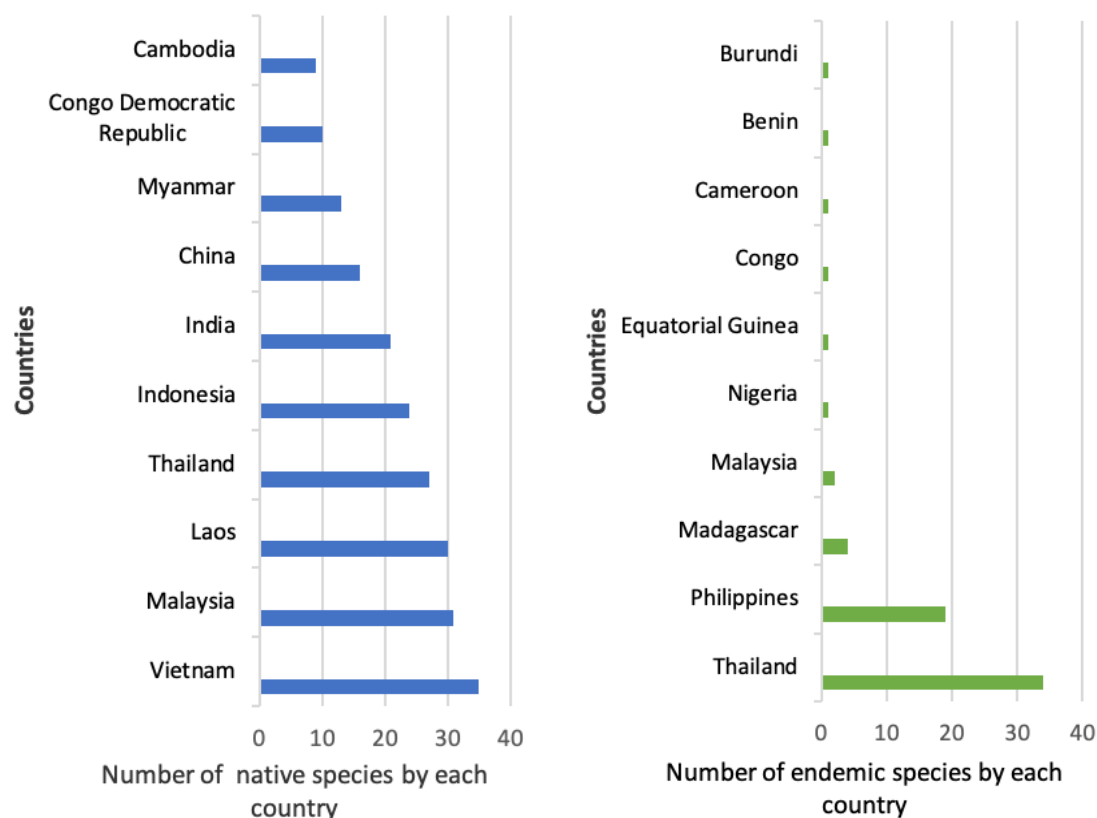


Figure 6. Number of native and endemic species of *Amorphophallus* by country.

danger rate for particular species globally (Brummitt et al. 2015). According to digital databases, 76.35% of *Amorphophallus* species were not evaluated for conservation status, and 13.70% have no record (Figure 4). Around 4.15% of *Amorphophallus* species globally were 'Critically Endangered', 2.90% 'Vulnerable', 0.83% 'Endangered', 0.83% 'Near Threatened', 0.83% 'Least Concern', and 0.83% 'Data Deficient'. IUCN admitted that the report's scope for assessing threatened plants might be inadequate (Brummitt et al. 2015).

Vietnam had the highest number of native *Amorphophallus* species, while Thailand had the highest number of endemic species, based on digital databases (Figure 6). The natural habitat of Vietnam sustained the diverse vegetation and higher biodiversity (Hung & Potokin 2019), which resulted in more native species surviving in the country. However, endemism is applied to species with a small population size with a very limited ecological distribution (Yudaputra et al. 2022). With the distinct habitat for diversity and bioresources of the species manifested by Thailand (Sungkajanttranon et al. 2018) higher number of endemic *Amorphophallus* species were able to survive and grow in the country. Endemic species in a particular area can adapt more

readily and thrive in diverse environmental conditions (Wulandari et al. 2022).

Some *Amorphophallus* species are adapted in a partly shaded area, secondary forest, and grassland (Mc Pherson & Hettterscheid 2011). A few species grow in limestone or karst forest ecosystem (Figure 8) based on digital databases, with 9.76% because some of the *Amorphophallus* species have a shallow root that is susceptible to drought (Misra et al. 2010). *Amorphophallus* needs soil that allows water to drain moderately. For the plant to grow better, appropriate soil nutrients, and proper draining of water in the soil are required (Yuzammi et al. 2018). Also, limestone contains fragments of elements that can enhance soil quality. Because of this, most of the time, *Amorphophallus* species are found in limestone and granite soil (Nguyen et al. 2016).

According to digital databases, *Amorphophallus* species are mostly distributed in the Indo-Malay biogeography region (Figure 9) with 56.65% because 70% of various species of *Amorphophallus* can be found in southeastern Asia (Caudel et al. 2019), which is under Indo-Malay biogeography. The center of distribution of *Amorphophallus* is Thailand because, based on the

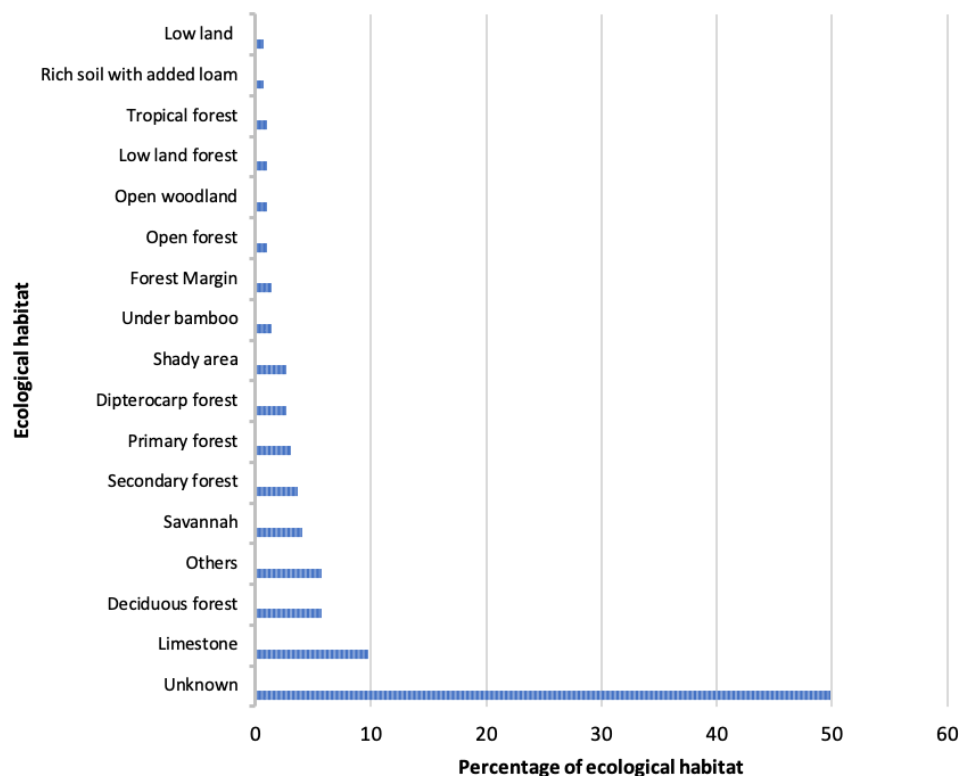


Figure 7. Percentage of each ecological habitat of *Amorphophallus* species.

record of digital databases, Thailand is the most species-rich country due to its ecological status suited for the diversity and bioresources of *Amorphophallus* species.

CONCLUSIONS AND RECOMMENDATIONS

The world checklist of *Amorphophallus* species revealed the current number of accepted species worldwide, their distribution status, ecological habitats, and conservation status. Out of 241 species as of this writing, *A. paeoniifolius* has the most significant number of occurrences, and Thailand is the most species-rich country of *Amorphophallus*. Many *Amorphophallus* species have not been evaluated, which can hinder the accurate assessment of the conservation status of some species. This data needs to be revisited, and more species should be included in the list for further protection. The majority of *Amorphophallus* species were adapted to limestone habitats. Therefore, the limestone ecosystem is one of the areas that people should protect from excessive degradation direct or indirect anthropogenic activities. Moreover, the primary goal of the checklist is to provide a record of all the *Amorphophallus* species worldwide. Ecologists, biogeographers, and taxonomists

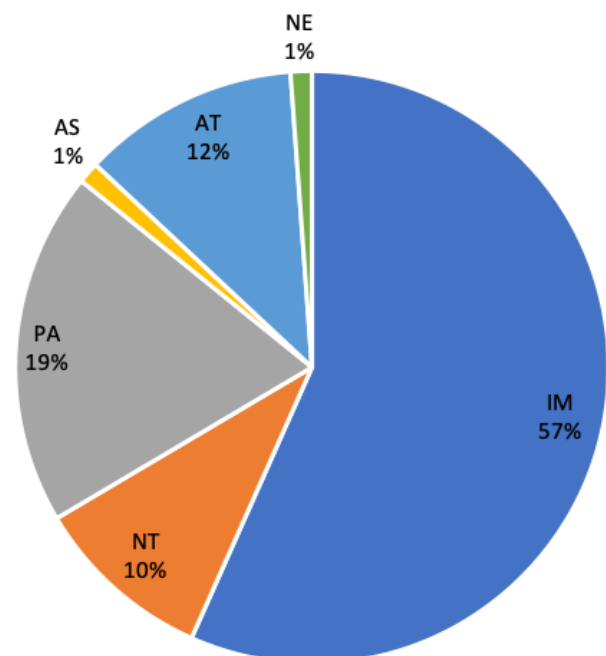


Figure 8. Percentage of *Amorphophallus* species by each geographic region: IM—Indo-Malay | NT— Nearctic | PA—Palearctic | AS—Australasia | AT—Afrotropic | NE—Neotropic.

must review the digital databases of *Amorphophallus* species and update them to enhance their utility in gaining knowledge about species biodiversity, thereby filling the information gap and making biodiversity details more comprehensive and up-to-date.

REFERENCES

- Anil, S.R., E.A. Siril & S.S. Beevy (2011). Morphological variability in 17 wild Elephant foot Yam *Amorphophallus paeoniifolius* collections from south west India. *Genetic Resources and Crop Evolution* 58: 1263–1274. <https://doi.org/10.1007/s10722-011-9752-z>
- Anil, S.R., E.A. Siril & S.S. Beevy (2014). Diversity analysis in *Amorphophallus* using Isozyme markers. *International Journal of Vegetable Science* 20: 305–321. <https://doi.org/10.1080/19315260.2013.803509>
- Barthlott, W., J. Szarzynski, P. Vlek, W. Lobin & N. Korotkova (2009). A torch in the rain forest: Thermogenesis of the Titan Arum *Amorphophallus titanum*. *Plant Biology* 11(4): 499–505. <https://doi.org/10.1111/j.1438-8677.2008.00147.x>
- Batuyong, M.A.R., M.A. Calaramo & G.J.D. Alejandro (2020). A checklist and conservation status of vascular plants in the limestone forests of Metropolitan Ilocos Norte Watershed Forest Reserve, Northwestern Luzon, Philippines. *Biodiversitas* 21(9): 3969–3981. <https://doi.org/10.13057/biodiv/d210907>
- Brummitt, N.A., S.P. Bachman, J. Griffiths-Lee, M. Lutz, J.F. Moat, A. Farjon, A., J.S. Donaldson, C. Hilton-Taylor, T.R. Meagher, S. Albuquerque, E. Aletrari, A.K. Andrews, G. Atchison, E. Baloch, B. Barlozzini, A. Brunazzi, J. Carretero, M. Celesti, H. Chadburn, E. Cianfoni, C. Cockell, V. Coldwell, B. Conzatti, S. Contu, V. Crook, P. Dyson, L. Gardiner, N. Ghanim, N. Greene, A. Groom, R. Harker, D. Hopkins, S. Khela, P. Lakeman-Fraser, H. Lindon, H. Lockwood, C. Loftus, D. Lombri, L. Lopez-Poved, J. Lyon, P. Malcolm-Tompkins, K. Mc Gregor, L. Moreno, L. Murray, K. Nazar, E. Power, M.Q. Tuijthelaars, R. Salter, R. Segrott, H. Thacker, L.J. Thoms, S. Tingvoll, G. Watkinson, K. Wojtaszekova & E.M. Nic Lughadha (2015). Green plants in the red: a baseline global assessment for the IUCN sampled red list index for plants. *PLOS ONE* 10(8): e0135152. <https://doi.org/10.1371/journal.pone.0135152>
- Bulawin, N.F., M.M.P. Medecilo-Guiang, G.J.D. Alejandro (2024). *Amorphophallus samarensis* (Araceae), a new species endemic to Samar Island, Eastern Visayas, Philippines. *Webbia* 79(2): 295–303. <https://doi.org/10.36253/jopt-16302>
- Bulawin, N.F., M.M.P. Medecilo-Guiang & G.J.D. Alejandro (2023). Palynology of Philippine *Amorphophallus* Blume ex Decne. (Araceae) and its taxonomic implications. *Biodiversitas* 24: 4095–4109. <https://doi.org/10.13057/biodiv/d240748>
- Bulawin, N.F., M.M.P. Medecilo-Guiang & G.J.D. Alejandro (2022). *Amorphophallus fontarumii* (Araceae), a new species from Tanay Rizal, Luzon Island, Philippines. *Nordic Journal of Botany* e03643: 1–12. <https://doi.org/10.1111/njb.03643>
- Calaramo, M.A., M.A.R. Batuyong, N.F. Bulawin & G.J.D. Alejandro (2022). Notes on the genus *Amorphophallus* Blume ex Decne. (Araceae) of northwestern Luzon, Philippines, including a new species. *Nordic Journal of Botany* e03491: 1–12. <https://doi.org/10.1111/njb.03491>
- CATE Araceae (2022). <https://cate-araceae.myspecies.info/>. Accessed on 30.i.2022.
- Chartier, M. & M. Gibernau (2009). Size variations of flowering characters in *Arum maculatum* (Araceae). *Aroideana* 32: 153–158.
- Chua, M., T.C. Baldwin, T.J. Hocking & K. Chan (2010). Traditional uses and potential health benefits of *Amorphophallus Konjac* K. Koch ex N.E. Br. *Journal of Ethnopharmacology* 128(2): 268–218. <https://doi.org/10.1016/j.jep.2010.01.021>
- Claudel, C., S. Buerki, L.W. Chatroo, A. Antonelli, N. Alvarez & W. Hettterscheid (2017). Large-scale phylogenetic analysis of *Amorphophallus* (Araceae) derived from nuclear and plastid sequences reveals new subgeneric delineation. *Botanical Journal of the Linnean society* 184(1): 32–45. <https://doi.org/10.1093/botlinnean/box013>
- Claudel, C., S. Yadun-Lev, W. Hettterscheid & M. Schultz (2019). Mimicry of lichens and cyanobacteria on tree sized *Amorphophallus* petioles results in their masquerade as inedible tree trunks. *Botanical Journal of the Linnean Society* 190(2): 192–214. <https://doi.org/10.1093/botlinnean/boz014>
- Claudel, C. (2021). The many elusive pollinators in the genus *Amorphophallus*. *Arthropod-Plant Interactions* 15: 833–844. <https://doi.org/10.1007/s11829-021-09865-x>
- Dapar, M.L.G., G.J.D. Alejandro, U. Meve & S.L. Schumann (2020). Ethnomedicinal importance and conservation status of medicinal trees among indigenous communities in Esperanza, Agusan de Sur Philippines. *Journal of Complementary Medicine Research* 11(1): 59–71. <https://doi.org/10.5455/jcmr.2020.11.01.08>
- Dempsey, C. (2022). Endemic, native, non-native, and invasive species. geography realm. <https://www.geographyrealm.com/endemic-native-non-native-and-invasive-species/>. Accessed on 25.iii.2022.
- Diaz, A. & G. Kite (2006). Why be a rewarding trap? The evolution of floral rewards in Arum (Araceae) a genus characterized by Saprophilous pollination systems. *Biological Journal of the Linnean Society* 88(2): 257–268. <https://doi.org/10.1111/j.1095-8312.2006.00612.x>
- Gao, Y., S. Yin, L. Wu, D. Dai, H. Wang, C. Liu & L. Tang (2017). Genetic diversity and structure of wild and cultivated *Amorphophallus paeoniifolius* population in southwestern China as revealed by RAD Seq. *Scientific Reports* 7: 1–10. <https://doi.org/10.1038/s41598-017-14738-6>
- GBIF (2022). Global Biodiversity Information Facility. <https://www.gbif.org/> Accessed on 30.i.2022.
- Grob, G.B.J., B. Gravendeel & M.C.M. Eurlings (2003). Potential phylogenetic utility of the nuclear floriculca/leafy second intron: Comparison with three chloroplast DNA regions in *Amorphophallus* (Araceae). *Molecular Phylogenetics and Evolution* 30(1): 13–23. [https://doi.org/10.1016/s1055-7903\(03\)00183-0](https://doi.org/10.1016/s1055-7903(03)00183-0)
- Gustini, E., D.W. Praptomo & A. Rodliyati (2017). The phenetic relationships of *Amorphophallus* sp. based on their morphological characteristics in Laren Subdistrict Lamongan Regency. 8th International Conference on Global Resource Conservation 1908(1): 1–6. <https://doi.org/10.1063/1.5012724>
- Hung, D.V. & A.F. Potokin (2019). Diversity of plant species composition and forest vegetation cover of Dong Nai Culture and Nature Reserve, Vietnam. IOP conference series: *Earth and Environmental Science* 316: 1–9. <https://doi.org/10.1088/1755-1315/316/1/012009>
- IAS (2022). International Aroid Society. <http://www.aroid.org/>. Accessed on 30.i.2022.
- Internet Directory for Botany (2022). <https://www.ou.edu/cas/botany-micro/idb-alpha/bot-di.html>. Accessed on 25 March 2022
- IPNI (2022). International Plant Names Index. <https://www.ipni.org/>. Accessed on 30.i.2022
- ISO 3166-1 alpha-2 code (2022). https://www.nationsonline.org/oneworld/country_code_list.htm. Accessed on 30.i.2022.
- IUCN (2022). The IUCN Red List of Threatened Species. Version 2021-3 <https://www.iucnredlist.org>. Accessed on 30.i.2022.
- Liu, K., N. Fadzly, A. Mansor, R. Zakaria, N. Ruppert & C.Y. Lee (2017). The dual defensive strategy of *Amorphophallus* throughout its ontogeny. *Plant Signaling and Behavior* 12(10): 1–6. <https://doi.org/10.1080/15592324.2017.1371890>
- Mastuti, R., N. Harijati, E.L. Arumingtyas & W. Widoretno (2018). Effect of bulbils position on leaf branches to plant growth responses and corms quality of *Amorphophallus muelleri* Blume. *Journal of Experimental Life Science* 8(1): 1–6. <https://doi.org/10.21776/UB.JELS.2018.008.01.01>
- Mbuni, Y.M., Y. Zhou, S. Wang, V.M. Ngumbau, P.M. Musili, F.M. Mutie, B. Njoroge, P.M. Kirika, G. Mwachala, K. Vivian, P.C. Rono,

- G. Hu & Q. Wang (2019). An annotated checklist of vascular plants of Cherangani Hills, western Kenya. *Phytokeys* 120: 1–90. <https://doi.org/10.3897/phytokeys.120.30274>
- Misra, R.S. & T. Osborn (2010). Konjac (*Amorphophallus Konjac* K. Koch): a high value crop. *Aroideana* 33: 215–207.
- Mc Pherson, S. & W. Hettterscheid (2011). *Amorphophallus* in the wild and in cultivation. *The Plantsman* June: 90–97.
- Moodley, D., S. Proches & J.R.U Wilson (2016). A Global assessment of a largemonocot family highlights the need for group-specific analyses of invasiveness. *AoB Plants* 8: 1–14. <https://doi.org/10.1093/aobpla/plw009>
- Mursyidin, D.H., M.A. Hernanda & Badruzsaufari (2022). Genetic diversity of Elephant Foot Yam *Amorphophallus paeoniifolius* and two other relatives from the Meratus mountains of south Kalimantan, Indonesia. *Journal of Tropical Biodiversity and Biotechnology* 7: 1–12. <https://doi.org/10.22146/jtbb.66231>
- Nguyen, V.D., H.T. Luu & Q.D. Nguyen (2016). *Amorphophallus kienluongensis* (Araceae), a new species from the Mekong Delta, southern Vietnam. *Blumea—Biodiversity, Evolution and Biogeography of Plants* 61(1): 1–3. <https://doi.org/10.3767/000651916X690395>
- NYBG (2022). New York Botanical Garden. <http://sweetgum.nybg.org/science/collections/>. Accessed on 25.iii.2022
- Olson, D.M., E. Dinerstein, E.D. Wikramanayake, N.D. Burgess, G.V.N. Powell, E.C. Underwood, J.A. D'amico, I. Itoua, H.E. Strand, J.C. Morrison, C.J. Loucks, T.F. Allnut, T.H. Ricketts, Y. Kura, J.F. Lamoreux, W.W. Wettengel, H. Prashant & Kassem (2001). Terrestrial ecoregions of the world: A new map of life on earth: A new global map of terrestrial ecoregions provides an innovative tool for conserving biodiversity. *Bio Science* 51(11): 933–338. [https://doi.org/10.1641/0006-3568\(2001\)051\[0933:TEOTWA\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2001)051[0933:TEOTWA]2.0.CO;2)
- Onyancha, J.M., E.W.T Wakori, G.A. Moriasi, B.W. Waiganjo & H.M. Mwambeo (2020). Plant checklist of Mount Kenya University Botanic Garden Thika, Kenya. *International Journal of Modern Botany* 10(1): 1–8. <https://doi.org/10.5923/j.ijmb.20201001.01>
- Pasta, S., A. La Rosa, G. Garfi, C. Marceno, A.S. Cristina, F. Carimi & R. Guarino (2020). An updated checklist of the Sicilian Native Edible Plants: Preserving the traditional ecological knowledge of century-old agro-pastoral landscapes. *Frontiers in Plant Science* 11: 1–15. <https://doi.org/10.3389/fpls.2020.00388>
- Pelser, P.B., J.F. Barcelona & D.L. Nickrent (2011 onwards). *Co's Digital Flora of the Philippines*. www.philippineplants.org. Accessed on 30.i.2022.
- Phornvillay, S., S.H. Ahmad, N.A.P. Abdullah, A.B. Rosenani, N.K. Yusof & N.A.M. Rashid (2015). Morphological variations of *Amorphophallus* spp. Blume ex Decne. in Peninsula-Malaysia. *Advances in Bioresearch* 6(2): 128–135. <https://doi.org/10.15515/abr.0976-4585.6.2.128135>
- POWO (2022). Plant of the World Online. <https://powo.science.kew.org/>. Accessed on 30.i.2022
- Reyserhove, L., P. Desmet, D. Oldoni, D.S. Adriaens, A.J.S. Davis, F.V. Vanderhoeven & Q. Groom (2020). A checklist recipe: making species data open and FAIR. *Database* 1.12. <https://doi.org/10.1093/database/baaa084>
- Rivai, R.R., Y. Isnaini & Y. Yuzammi (2022). Elucidation of the radio-sensitivity level of *Amorphophallus paeoniifolius* (Dennst.) Nicolson embryogenic callus Induced by gamma ray irradiation. *Biology and Life Sciences Forum* 11(1): 93. <https://doi.org/10.3390/IECPS2021-11951>
- Sharma, A., G. Bano & Ayushi (2022). Type – II delayed hypersensitivity reaction by processed Elephant Foot Yam *Amorphophallus paeoniifolius*. *IP International Journal of Comprehensive and Advanced Pharmacology* 7(1): 65–67. <https://doi.org/10.18231/j.ijcaap.2022.011>
- Sivilla, R.G. & I.E.M. Santos (2021). On genus *Amorphophallus* Blume ex Decne (Araceae) in Cuba. *Agrisost* 27(1): 1–12. <https://doi.org/10.5281/zenodo.7405811>
- Sookchaloem, D., O. Sungkajanttranon, S. Petchsri, S. Horadee, C. Huayhongthong, A. Vanapanich & C. Wongsawaddiwattana (2016). Leaf blade anatomy characteristics of the genus *Amorphophallus* Blume ex Decne. in Thailand. *Agriculture and Nature Resources* 50(6): 437–444. <https://doi.org/10.1016/j.anres.2016.09.002>
- Sungkajanttranon, O., D. Marod & K. Thanompun (2018). Diversity and distribution of family Araceae in Doi Inthanon National Park Chiang Mai Province. *Agriculture and Natural Resources* 52(2): 125–131. <https://doi.org/10.1016/j.anres.2018.06.009>
- Taseski, G.M., C.J. Beloe, R.V. Gallagher, J.Y. Chan, R.L. Dalrymple & W.K. Cornwell (2019). A global growth-form database for 143, 616 vascular plant species. *Ecology* 100(3): e02614. <https://doi.org/10.1002/ecy.2614>
- Tropicos (2022). Missouri Botanical Garden. <https://www.tropicos.org/home>. Accessed on 25.iii.2022.
- Ulrich, S., M. Hesse, M. Weber & H. Halbritter (2016). *Amorphophallus*: new insights into pollen morphology and the chemical nature of the pollen wall. *Grana* 56(1): 1–36. <https://doi.org/10.1080/00173134.2015.1133699>
- WCSP (2022). World Checklist of Selected Plant. <http://wmsp.science.kew.org/home.do>. Accessed on 25.iii.2022.
- WCVP (2022). World Checklist of Vascular Plants. <https://wcvp.science.kew.org> Accessed on 30.i.2022
- WFO (2022). The World Flora Online. <http://www.worldfloraonline.org>. Accessed on 25.iii.2022.
- Wulandari, R.S., S. Ivo & H. Darwati (2022). Population distribution of *Amorphophallus* at several altitudes in mount Poteng, Raya Pasi Nature Reserve, West Kalimantan. *Jurnal Sylva Lestari* 10(1): 167–179. <https://doi.org/10.23960/jsl.v10i1.552>
- Yudaputra, A., J.R. Witono, I.P. Astuti, E. Munawaroh, Yuzammi, I.A. Fijridiyanto, R.N. Zulkarnaen, I. Robiansyah, P.D. Raharjo & W.P.J. Cropper (2022). Habitat suitability, population structure and conservation status of *Pinanga arinasae* (Arecaceae), an endemic palm in Bali Island, Indonesia. *Diversity* 14(10):1–16. <https://doi.org/10.3390/d14010010>
- Yuzammi, Y. (2009). The genus *Amorphophallus* Blume Ex Decaisne (Araceae-Thomsonieae) in Java. *Reinwardtia* 13(1): 1–12.
- Yuzammi, Y., K.N. Tyas & Handayani (2018). The peculiar petiole calluses growth of *Amorphophallus titanum* (Becc.) ex Arcang and it's implications for situ conservation efforts. *Biotropica* 25(1): 56–63. <https://doi.org/10.11598/btb.2018.25.1.706>

Mr. Jatishwor Singh Irungbam, Biology Centre CAS, Branišovská, Czech Republic.
Dr. Ian J. Kitching, Natural History Museum, Cromwell Road, UK
Dr. George Mathew, Kerala Forest Research Institute, Peechi, India
Dr. John Noyes, Natural History Museum, London, UK
Dr. Albert G. Orr, Griffith University, Nathan, Australia
Dr. Sameer Padhye, Katholieke Universiteit Leuven, Belgium
Dr. Nancy van der Poorten, Toronto, Canada
Dr. Kareen Schnabel, NIWA, Wellington, New Zealand
Dr. R.M. Sharma, (Retd.) Scientist, Zoological Survey of India, Pune, India
Dr. Manju Siliwal, WILD, Coimbatore, Tamil Nadu, India
Dr. G.P. Sinha, Botanical Survey of India, Allahabad, India
Dr. K.A. Subramanian, Zoological Survey of India, New Alipore, Kolkata, India
Dr. P.M. Sureshan, Zoological Survey of India, Kozhikode, Kerala, India
Dr. R. Varatharajan, Manipur University, Imphal, Manipur, India
Dr. Eduard Vives, Museu de Ciències Naturals de Barcelona, Terrassa, Spain
Dr. James Young, Hong Kong Lepidopterists' Society, Hong Kong
Dr. R. Sundararaj, Institute of Wood Science & Technology, Bengaluru, India
Dr. M. Nithyanandan, Environmental Department, La Ala Al Kuwait Real Estate. Co. K.S.C., Kuwait
Dr. Himender Bharti, Punjabi University, Punjab, India
Mr. Purnendu Roy, London, UK
Mr. Saito Motoki, The Butterfly Society of Japan, Tokyo, Japan
Dr. Sanjay Sondhi, TITLI TRUST, Kalpavriksh, Dehradun, India
Dr. Nguyen Thi Phuong Lien, Vietnam Academy of Science and Technology, Hanoi, Vietnam
Dr. Nitin Kulkarni, Tropical Research Institute, Jabalpur, India
Dr. Robin Wen Jiang Ngiam, National Parks Board, Singapore
Dr. Lionel Monod, Natural History Museum of Geneva, Genève, Switzerland.
Dr. Asheesh Shivam, Nehru Gram Bharti University, Allahabad, India
Dr. Rosana Moreira da Rocha, Universidade Federal do Paraná, Curitiba, Brasil
Dr. Kurt R. Arnold, North Dakota State University, Saxony, Germany
Dr. James M. Carpenter, American Museum of Natural History, New York, USA
Dr. David M. Claborn, Missouri State University, Springfield, USA
Dr. Kareen Schnabel, Marine Biologist, Wellington, New Zealand
Dr. Amazonas Chagas Júnior, Universidade Federal de Mato Grosso, Cuiabá, Brasil
Mr. Monsoon Jyoti Gogoi, Assam University, Silchar, Assam, India
Dr. Heo Chong Chin, Universiti Teknologi MARA (UiTM), Selangor, Malaysia
Dr. R.J. Shiel, University of Adelaide, SA 5005, Australia
Dr. Siddharth Kulkarni, The George Washington University, Washington, USA
Dr. Priyadarsanan Dharma Rajan, ATREE, Bengaluru, India
Dr. Phil Alderslade, CSIRO Marine And Atmospheric Research, Hobart, Australia
Dr. John E.N. Veron, Coral Reef Research, Townsville, Australia
Dr. Daniel Whitmore, State Museum of Natural History Stuttgart, Rosenstein, Germany.
Dr. Yu-Feng Hsu, National Taiwan Normal University, Taipei City, Taiwan
Dr. Keith V. Wolfe, Antioch, California, USA
Dr. Siddharth Kulkarni, The Hormiga Lab, The George Washington University, Washington, D.C., USA
Dr. Tomas Ditrich, Faculty of Education, University of South Bohemia in Ceske Budejovice, Czech Republic
Dr. Mihaly Foldvari, Natural History Museum, University of Oslo, Norway
Dr. V.P. Uniyal, Wildlife Institute of India, Dehradun, Uttarakhand 248001, India
Dr. John D.L. Caleb, Zoological Survey of India, Kolkata, West Bengal, India
Dr. Priyadarsanan Dharma Rajan, Ashoka Trust for Research in Ecology and the Environment (ATREE), Royal Enclave, Bangalore, Karnataka, India

Fishes

Dr. Topiltzin Contreras MacBeath, Universidad Autónoma del estado de Morelos, México
Dr. Heok Hee Ng, National University of Singapore, Science Drive, Singapore
Dr. Rajeev Raghavan, St. Albert's College, Kochi, Kerala, India
Dr. Robert D. Sluka, Chiltern Gateway Project, A Rocha UK, Southall, Middlesex, UK
Dr. E. Vivekanandan, Central Marine Fisheries Research Institute, Chennai, India
Dr. Davor Zanella, University of Zagreb, Zagreb, Croatia
Dr. A. Biju Kumar, University of Kerala, Thiruvananthapuram, Kerala, India
Dr. Akhilesh K.V., ICAR-Central Marine Fisheries Research Institute, Mumbai Research Centre, Mumbai, Maharashtra, India
Dr. J.A. Johnson, Wildlife Institute of India, Dehradun, Uttarakhand, India
Dr. R. Ravinesh, Gujarat Institute of Desert Ecology, Gujarat, India

Amphibians

Dr. Sushil K. Dutta, Indian Institute of Science, Bengaluru, Karnataka, India
Dr. Annemarie Ohler, Muséum national d'Histoire naturelle, Paris, France

Reptiles

Dr. Gernot Vogel, Heidelberg, Germany
Dr. Raju Vyas, Vadodara, Gujarat, India
Dr. Pritpal S. Soorae, Environment Agency, Abu Dhabi, UAE.
Prof. Dr. Wayne J. Fuller, Near East University, Mersin, Turkey
Prof. Chandrashekhar U. Rivonker, Goa University, Taleigao Plateau, Goa. India
Dr. S.R. Ganesh, Chennai Snake Park, Chennai, Tamil Nadu, India
Dr. Himansu Sekhar Das, Terrestrial & Marine Biodiversity, Abu Dhabi, UAE

Birds

Dr. Hem Sagar Baral, Charles Sturt University, NSW Australia
Mr. H. Byju, Coimbatore, Tamil Nadu, India
Dr. Chris Bowden, Royal Society for the Protection of Birds, Sandy, UK
Dr. Priya Davidar, Pondicherry University, Kalapet, Puducherry, India
Dr. J.W. Duckworth, IUCN SSC, Bath, UK
Dr. Rajah Jayapal, SAGON, Coimbatore, Tamil Nadu, India
Dr. Rajiv S. Kalsi, M.L.N. College, Yamuna Nagar, Haryana, India
Dr. V. Santharam, Rishi Valley Education Centre, Chittoor Dt., Andhra Pradesh, India
Dr. S. Balachandran, Bombay Natural History Society, Mumbai, India
Mr. J. Praveen, Bengaluru, India
Dr. C. Srinivasulu, Osmania University, Hyderabad, India
Dr. K.S. Gopi Sundar, International Crane Foundation, Baraboo, USA
Dr. Gombobaatar Sunde, Professor of Ornithology, Ulaanbaatar, Mongolia
Prof. Reuven Yosef, International Birding & Research Centre, Eilat, Israel
Dr. Taej Mundkur, Wetlands International, Wageningen, The Netherlands
Dr. Carol Inskipp, Bishop Auckland Co., Durham, UK
Dr. Tim Inskipp, Bishop Auckland Co., Durham, UK
Dr. V. Gokula, National College, Tiruchirappalli, Tamil Nadu, India
Dr. Arkady Lelej, Russian Academy of Sciences, Vladivostok, Russia
Dr. Simon Dowell, Science Director, Chester Zoo, UK
Dr. Mário Gabriel Santiago dos Santos, Universidade de Trás-os-Montes e Alto Douro, Quinta de Prados, Vila Real, Portugal
Dr. Grant Connette, Smithsonian Institution, Royal, VA, USA
Dr. P.A. Azeez, Coimbatore, Tamil Nadu, India

Mammals

Dr. Giovanni Amori, CNR - Institute of Ecosystem Studies, Rome, Italy
Dr. Anwaruddin Chowdhury, Guwahati, India
Dr. David Mallon, Zoological Society of London, UK
Dr. Shomita Mukherjee, SAGON, Coimbatore, Tamil Nadu, India
Dr. Angie Appel, Wild Cat Network, Germany
Dr. P.O. Nameer, Kerala Agricultural University, Thrissur, Kerala, India
Dr. Ian Redmond, UNEP Convention on Migratory Species, Lansdown, UK
Dr. Heidi S. Riddle, Riddle's Elephant and Wildlife Sanctuary, Arkansas, USA
Dr. Karin Schwartz, George Mason University, Fairfax, Virginia.
Dr. Lala A.K. Singh, Bhubaneswar, Orissa, India
Dr. Mewa Singh, Mysore University, Mysore, India
Dr. Paul Racey, University of Exeter, Devon, UK
Dr. Honnavalli N. Kumara, SAGON, Anaikatty P.O., Coimbatore, Tamil Nadu, India
Dr. Nishith Dharaiya, HNG University, Patan, Gujarat, India
Dr. Spartaco Gippoliti, Socio Onorario Società Italiana per la Storia della Fauna "Giuseppe Altobello", Rome, Italy
Dr. Justus Joshua, Green Future Foundation, Tiruchirappalli, Tamil Nadu, India
Dr. H. Raghuram, The American College, Madurai, Tamil Nadu, India
Dr. Paul Bates, Harison Institute, Kent, UK
Dr. Jim Sanderson, Small Wild Cat Conservation Foundation, Hartford, USA
Dr. Dan Challender, University of Kent, Canterbury, UK
Dr. David Mallon, Manchester Metropolitan University, Derbyshire, UK
Dr. Brian L. Cypher, California State University-Stanislaus, Bakersfield, CA
Dr. S.S. Talmale, Zoological Survey of India, Pune, Maharashtra, India
Prof. Karan Bahadur Shah, Budhanilakantha Municipality, Kathmandu, Nepal
Dr. Susan Cheyne, Borneo Nature Foundation International, Palangkaraja, Indonesia
Dr. Hemanta Kafley, Wildlife Sciences, Tarleton State University, Texas, USA

Other Disciplines

Dr. Aniruddha Belsare, Columbia MO 65203, USA (Veterinary)
Dr. Mandar S. Paingankar, University of Pune, Pune, Maharashtra, India (Molecular)
Dr. Jack Tordoff, Critical Ecosystem Partnership Fund, Arlington, USA (Communities)
Dr. Ulrike Streicher, University of Oregon, Eugene, USA (Veterinary)
Dr. Hari Balasubramanian, EcoAdvisors, Nova Scotia, Canada (Communities)
Dr. Rayanna Hellem Santos Bezerra, Universidade Federal de Sergipe, São Cristóvão, Brazil
Dr. Jamie R. Wood, Landcare Research, Canterbury, New Zealand
Dr. Wendy Collinson-Jonker, Endangered Wildlife Trust, Gauteng, South Africa
Dr. Rajeshkumar G. Jani, Anand Agricultural University, Anand, Gujarat, India
Dr. O.N. Tiwari, Senior Scientist, ICAR-Indian Agricultural Research Institute (IARI), New Delhi, India
Dr. L.D. Singla, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, India
Dr. Rupika S. Rajakaruna, University of Peradeniya, Peradeniya, Sri Lanka
Dr. Bahar Baviskar, Wild-CER, Nagpur, Maharashtra 440013, India

Reviewers 2021–2023

Due to pausity of space, the list of reviewers for 2021–2023 is available online.

The opinions expressed by the authors do not reflect the views of the Journal of Threatened Taxa, Wildlife Information Liaison Development Society, Zoo Outreach Organization, or any of the partners. The journal, the publisher, the host, and the partners are not responsible for the accuracy of the political boundaries shown in the maps by the authors.

Print copies of the Journal are available at cost. Write to:
The Managing Editor, JoTT,
c/o Wildlife Information Liaison Development Society,
3A2 Varadarajulu Nagar, FCI Road, Ganapathy, Coimbatore,
Tamil Nadu 641006, India
ravi@threatenedtaxa.org & ravi@zooreach.org

Journal of Threatened Taxa is indexed/abstracted in Bibliography of Systematic Mycology, Biological Abstracts, BIOSIS Previews, CAB Abstracts, EBSCO, Google Scholar, Index Copernicus, Index Fungorum, JournalSeek, National Academy of Agricultural Sciences, NewJour, OCLC WorldCat, SCOPUS, Stanford University Libraries, Virtual Library of Biology, Zoological Records.

NAAS rating (India) 5.64



OPEN ACCESS



The Journal of Threatened Taxa (JoTT) is dedicated to building evidence for conservation globally by publishing peer-reviewed articles online every month at a reasonably rapid rate at www.threatenedtaxa.org. All articles published in JoTT are registered under [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/) unless otherwise mentioned. JoTT allows unrestricted use, reproduction, and distribution of articles in any medium by providing adequate credit to the author(s) and the source of publication.

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

June 2025 | Vol. 17 | No. 6 | Pages: 27035–27170

Date of Publication: 26 June 2025 (Online & Print)

DOI: 10.11609/jott.2025.17.6.27035-27170

www.threatenedtaxa.org

Articles

Inventory of traditional medicinal plants and ethnobotanical knowledge from Hassan District, Karnataka, India

– Kushavara Venkatesh Amara, Gotravalli Manjunatha Prashanth Kumar & Rajkumar Hanumanthrao Garampalli, Pp. 27035–27063

An annotated checklist of lianas in Manipur, India

– Longjam Malemnganbee Chanu & Debjyoti Bhattacharyya, Pp. 27064–27074

New records and typification in family Poaceae from western Himalaya, India

– Smita Tiwari, Dileshwar Prasad, Sangam Sharma, Supriya Tiwari & Priyanka Agnihotri, Pp. 27075–27086

Collection and lipid analysis of marine unialgal cyanobacteria: a case study from the southeastern coast of India

– Selvam Selvapriya & Sundaram Rajakumar, Pp. 27087–27097

Range expansion of Indian Grey Hornbill population: a case study based on land use, land cover, and vegetation changes in Vadodara, Gujarat, India

– Parikshit Dhaduk & Geeta Padate, Pp. 27098–27109

Communications

A pioneer study of orchids on Nusa Barung Island of Indonesia

– Toni Artaka, Bina Swasta Sitepu, Fajar Dwi Nur Aji, Suryadi & Tri Atmoko, Pp. 27110–27115

A bibliometric visualization of trends in Philippine sharks studies published in Scopus-indexed journals over the past five decades

– Merfat Ampong Sali, Najeeb Razul Ampong Sali, Araniza M. Diansuy, Anina Haslee A. Julkanain-Ong & Richard Nami Muallil, Pp. 27116–27124

First camera-trap evidence of Dhole *Cuon alpinus* Pallas, 1811 (Carnivora: Canidae) from the Kaziranga-Karbi Anglong landscape, Assam, India

– Mujahid Ahamad, Jyotish Ranjan Deka, Priyanka Borah, Umar Saeed, Ruchi Badola & Syed Ainul Hussain, Pp. 27125–27130

Distribution, habitat use and conservation status of Smooth-coated Otter *Lutrogale perspicillata* along the Cauvery and Kabini rivers, Karnataka, India

– Allison Amavisca, Raghunath Belur & Sugandhi Gadadhar, Pp. 27131–27140

Review

An annotated checklist of the genus *Amorphophallus* Blume ex Decne. (Araceae): an update on the distribution and conservation status of its species

– Norilyn Fontarum-Bulawin, Michael A. Calaramo & Grecebio Jonathan D. Alejandro, Pp. 27141–27158

Short Communications

Embelia ribes Burm.f. (Primulaceae) – an ayurvedic plant with ethnobotanical notes from Manipur, India

– Robert Panmei, Soyala Kashung, Lanrili Dangmei, Akoijam Surviya & Ungpemmi Ningshen, Pp. 27159–27162

First record of marine isopod *Synidotea variegata* (Collinge, 1917), (Crustacea: Isopoda: Valvifera) from the Gulf of Kutch, Gujarat, northwestern coast of India

– Deep D. Dudiya, Mansi S. Goswami & Pranav J. Pandya, Pp. 27163–27166

Lesser Blue-wing *Rhyothemis triangularis* Kirby, 1889 (Insecta: Libellulidae), a new addition to the dragonfly diversity of Rajasthan, India

– Anil Sarsavan, Manohar Pawar, Satish Kumar Sharma & Vinod Paliwal, Pp. 27167–27170

Publisher & Host



Threatened Taxa