

BULLETIN



HELICONIA
SOCIETY
INTERNATIONAL

A Journal of the Zingiberales, including Cannaceae, Costaceae, Heliconiaceae, Lowiaceae, Marantaceae, Musaceae, Strelitziaceae, and Zingiberaceae

JUNE 2022

ISSN 2576-5507

VOL. 28 NO. 2

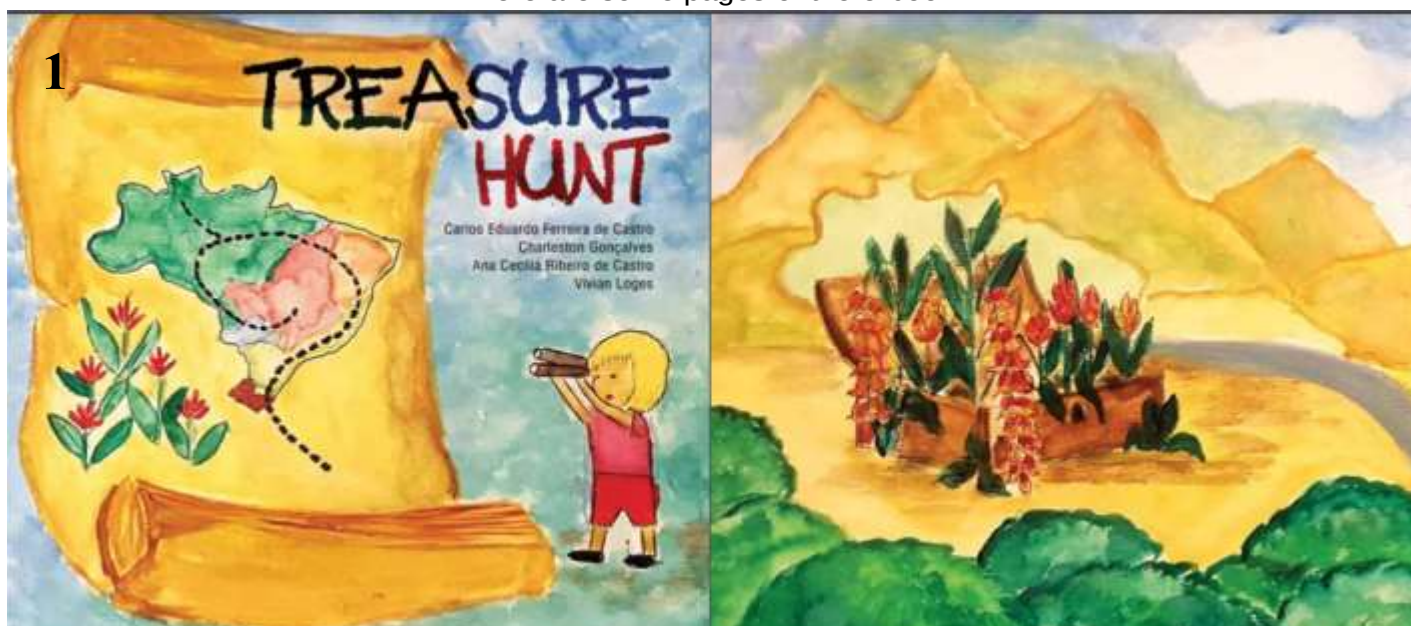
HSI Headquarters
Dr. David H. Lorence
National Tropical Botanical Garden
3530 Papalina Road
Kalaheo, Hawaii 96741 USA

HSI Editors:
Ken W. Leonhardt
Department of Tropical Plant and
Soil Sciences, University of Hawaii
Honolulu, Hawaii 96822 USA

Dra. Vivian Loges
Laboratório de Floricultura, Departamento
de Agronomia Universidade Federal Rural
de Pernambuco - UFRPE, Brazil

Our fellow members of HSI, Carlos Castro, Cecilia Castro and Vivian Loges, wrote the book "Treasure Hunt". This children's story uses the genus *Heliconia* as an example and presents the basic concepts of plant collection and its importance to the conservation of genetic resources for agriculture.

Here are some pages of the e-book!





The Purpose of HSI

The purpose of HSI is to increase the enjoyment and understanding of *Heliconia* (Heliconiaceae) and related plants (in the families Cannaceae, Costaceae, Lowiaceae, Marantaceae, Musaceae, Strelitziaceae, and Zingiberaceae) of the order Zingiberales through education, research and communication. Interest in Zingiberales and information on the cultivation and botany of these plants is rapidly increasing. HSI will centralize this information and distribute it to members.

The **HELICONIA SOCIETY INTERNATIONAL**, a non-profit corporation, was formed in 1985 because of rapidly developing interest around the world in these plants and their close relatives. We are composed of dues-paying members. Our officers and all participants are volunteers. Everyone is welcome to join and participate. HSI conducts a Biennial Meeting and International Conference.

Membership dues are (in \$US): Individual \$40, Family \$45, PDF \$25, Student \$10, Library \$35, Contributing \$50, Corporate \$100, Sustaining \$500, Lifetime Member \$1000.

Membership fees constitute annual dues from 1 July through 30 June. All members receive the BULLETIN (usually published quarterly) and special announcements. Join or renew your membership at www.heliconia.org.

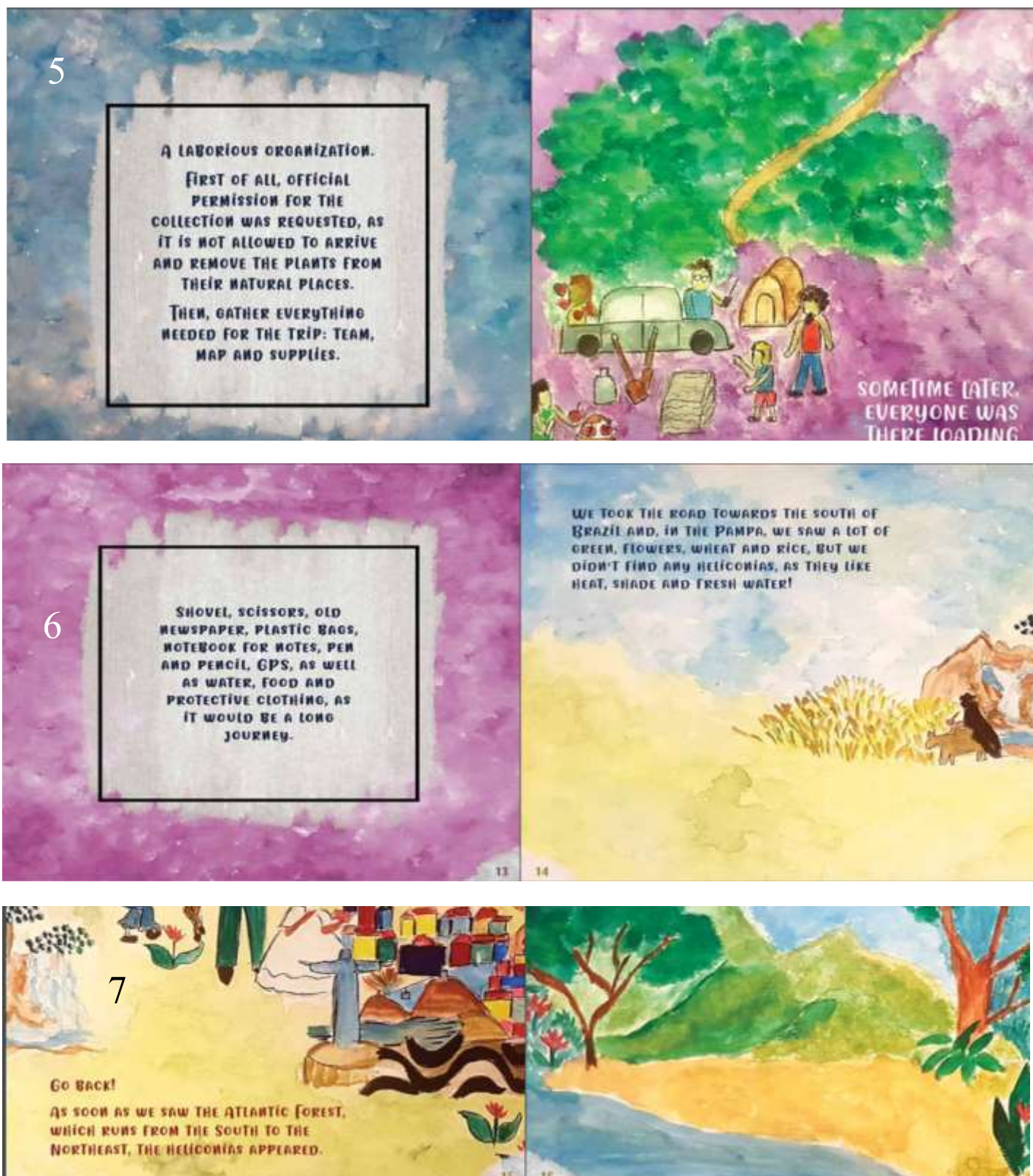
HSI Officers and Board of Directors for 2021-2022

Carla Black, President and Membership; David Lorence, Treasurer; Jan Hintze, Secretary, Membership and Etlingera Cultivar Registrar; Dave Skinner, Costaceae Cultivar Registrar and Conservation; Colton Collins, Webmaster; Chelsea Specht, Student Grants; Bryan Brunner, Heliconia Cultivar Registrar; Sandra Barnes, Archivist; and Directors: Vinita Gowda, Timothy Chapman, Vivian Loges, Minal Patil and Bian Tan.

The HSI BULLETIN is the quarterly publication of the HELICONIA SOCIETY INTERNATIONAL.

Inquiries: Jan Hintze, admin@heliconia.org.

Website: www.heliconia.org



You can continue reading the e-book, with versions in English, Spanish and Portuguese, by downloading it for free at <http://recursosgeneticos.org/publicacoes/livros> This is the homepage of the Brazilian Society of Genetic Resources, whose mission is to disseminate knowledge and scientific advances applied to the conservation and use of animal, plant and microorganism genetic resources of economic, environmental and social importance.

Back to the Tropics – my first post-pandemic trip to Latin America

Dave Skinner (selvadero@gmail.com)

After two years of travel restrictions caused by the Pandemic, I finally made plans to return to the tropics last January to look for *Costus*. The Pandemic may not have truly been over but being fully vaccinated and “boosted” I felt relatively safe making a trip to Latin America. Ecuador at the time was known to be one of the most progressive countries in Latin America for controlling the Pandemic with the highest rate of citizen vaccination, tightest restrictions on mask wearing in public and one of the lowest reported rates of infection despite a very aggressive testing program.

My primary objective for this trip was to search the mountainous province of Tungurahua in Ecuador for one of the plants that Dr. Paul Maas and I are planning to publish as a new species. Tungurahua is best known for the volcano by that name and for the tourist town of Baños, but I arranged to stay at a place farther down the Rio Pastaza that was located within the elevation range (between 1200 and 1600 meters) as the herbaria specimens Dr. Maas had studied. He had concluded that they were of the same species as one I had found in 2015 in the higher elevations of Zamora-Chinchipe to the south, but we did not know much about the flower forms or with real certainty whether the same species was growing in both regions.



Costus sp nov from Tungurahua

After just two days of exploring both to the north and south along tributaries of the Rio Pastaza, I found the plants closely matching the ones I had seen in Zamora-Chinchipe. This new species is closest to *Costus laevis* but it differs by having a shorter ligule and puberulous sheaths and leaves. To my surprise, I also found that it has corolla lobes that fold down sharply, very much like in *Costus pulverulentus* in Central American plants.



Costus sp nov from Tungurahua, inflorescence with curled corolla



Costus sp nov from Tungurahua with short ligules



Costus sp nov from Tungurahua with leaf indumentum

After leaving Tungurahua, I traveled on into the province of Pastaza, then into Napo to the west of Tena and then north to a more remote indigenous region known as Narupa where I stayed several days with an indigenous family. The Narupa area includes the broad expanse of a high plateau with rivers forming deep canyons, the most famous of which is *El Gran Cañon* which includes an underground waterfall inside a cave that you can walk into.

It is time for you to
Renew Your Membership
 at
www.heliconia.org



Indigenous family I stayed with in Narupa



Waterfall in cave at *El Gran Cañon*



Broad plateau of Narupa



Geological form at Narupa



Costus asplundii at type locality



Costus asplundii in Napo

I found that there are two distinct forms of *Costus asplundii* – the reddish bract form with beautiful pink flowers (found in Napo) and the form of the type specimen from Mera, Pastaza that has green bracts and white flowers.

Near Tena I found growing in primary forest exact duplicates of the famous, widely cultivated ‘El Whiskey’ plant from Putumayo, Colombia that is usually included in *Costus erythrophyllus*. Dr. Maas is now confident enough after seeing my photos and details from the naturally occurring plants that he is going to make this a separate new species.



Costus El Whiskey near Tena



Costus El Whiskey flower

Another interesting discovery in Narupa along the Rio Hollín was a white flowering *Costus* similar to *C. arabicus* but with inflated margins to the lower sheaths similar to what I had seen in Putumayo, Colombia in 2018. This very likely will eventually be described as another new species.



Costus aff *arabicus* inflated sheaths



Costus aff *arabicus* over 6 meters tall



Costus aff arabicus inflorescence

Costus zamoranus was found to be quite common in the Narupa area, extending its distribution range much farther to the north than the previous limit of Morona-Santiago. Another new species, as yet unpublished, was found to be very common throughout the region along the eastern flanks of the mountains throughout Ecuador and extending into southern Colombia. Other species common in the region include *Costus amazonicus* and *Costus longibracteolatus*.



Costus zamoranus at Narupa



Costus zamoranus at Narupa, wild



C. longibracteolatus in Napo



Costus sp. nov. in Ecuador



Costus amazonicus at Narupa

More photos with details of my observations of *Costus* from this trip and the proposed names of the new species when published can be found on Inaturalist.org at the following link:

www.inaturalist.org/observations/selvadero?utf8=%E2%9C%93&q=&place_id=7512&year=2022

Diversity of the Genus *Hedychium* J.Koenig (Zingiberaceae) in India - IV: Western Ghats

Ajith Ashokan^{1,2}, Vinita Gowda^{1,3}

¹Tropical Ecology and Evolution (TrEE) Lab, Department of Biological Sciences, Indian Institute of Science Education and Research (IISER) Bhopal, Madhya Pradesh- 4620066, India.

²ajithashoksridhar@gmail.com;

³gowdav@iiserb.ac.in

Abstract

The genus *Hedychium* is one of the most diverse genera among Zingiberaceae in South Asia. Within the Indian subcontinent, *Hedychium* distribution is restricted mainly to the northeastern states of India, Himalayas, and the Western Ghats. In Western Ghats, *Hedychium* is represented by six species, of which two are identified to be endemic to the region. In this article, we provide descriptions and distribution details for the *Hedychium* species that are recorded in the Western Ghats.

the genus is widely distributed in the northeastern states (NE India: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim), Himalayas, and the Western Ghats (Sanoj, 2011). Among these regions, the Western Ghats together with Sri Lanka (Fig. 1) represents one of the unique affairs of disjunction in the overall distribution range of this genus (Ashokan et al., 2022).

The Western Ghats and Sri Lanka is a biodiversity hotspot that is located in the southwestern region of the Indian subcontinent (Vijayakumar et al., 2016; Ashokan et al., 2022). Apart from the northeastern states (that represent either Indo-Burma or Himalayan ecoregions), Western Ghats harbors one of the last remaining evergreen forest patches within India (Ashokan et al., 2022). Although *Hedychium* is not so diverse in the Western Ghats, the presence of a few endemic species of this genus there makes this region quite special for those who are interested in the evolution of lineages in the ginger family within Peninsular India.

Within the Western Ghats, as the southern parts of this mountain chain receive abundant rainfall for prolonged periods of time (compared to its northern counterpart), the southern Western Ghats possesses a higher diversity of



Fig. 1. Map depicting the geographical areas of south and southeast Asia including the Western Ghats biodiversity hotspot. The base map is downloaded from Apple Maps (<https://www.apple.com/in/maps/>)

Introduction

Hedychium (Zingiberaceae) is restricted to the Indo-Malayan Realm (IMR) and is known for its splendid floral structures, fragrant aroma, long-lasting terminal inflorescence, and robust plant habit (Ashokan, 2020). In India,

gingers including *Hedychium* (Sabu, 2006). The higher species richness in *Hedychium* in the southern Western Ghats is also speculated to be due to its higher elevation. The genus *Hedychium* is represented by six species in the Western Ghats, of which two species are endemic to the

southern Western Ghats (Sanoj, 2011; Ashokan, 2020). The species diversity of *Hedychium* declines to both central and northern Western Ghats as well as Sri Lanka, where the genus is represented only by *H. coronarium* and *H. flavescens*, the two most widespread species in this genus (Ashokan et al., 2022). In this article, we aim to document the diversity of *Hedychium* species from the Western Ghats.

Materials and methods

We examined all *Hedychium* protologues including monographs and revisions (refer to Ashokan and Gowda, 2019). We also consulted herbarium collections, including type specimens at ARUN (Botanical Survey of India, Arunachal Pradesh Regional Centre, Itanagar, Arunachal Pradesh, India), ASSAM (Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya, India), BHPL (Indian Institute of Science Education and Research Bhopal, Madhya Pradesh, India), BM (The Natural History Museum, London, United Kingdom), BO (Research Centre for Biology, Indonesian Institute of Sciences, Bogor, Indonesia), BSA (Botanical Survey of India, Central Regional Centre, Allahabad, Uttar Pradesh, India), BSHC (Botanical Survey of India, Sikkim Himalayan Circle, Gangtok, Sikkim, India), BSI (Botanical Survey of India, Western Circle, Pune, Maharashtra, India), CAL (Botanical Survey of India, Howrah, West Bengal, India), E (Royal Botanic Garden Edinburgh, United Kingdom), K (Royal Botanic Gardens, Kew, London, United Kingdom), LINN (Linnean Society of London, United Kingdom), LIV (World Museum, National Museums Liverpool, United Kingdom), MH (Botanical Survey of India, Southern Regional Centre, Coimbatore, Tamil Nadu, India), QBG (Queen Sirikit Botanic Garden, Chiang Mai, Thailand), SING (Singapore Botanic Gardens, Singapore), TBGT (Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Thiruvananthapuram, Kerala, India), and online databases (Global Plants: <https://plants.jstor.org/>; Kew Herbarium Catalogue: <http://apps.kew.org/herbcat/>; Muséum national d'Histoire naturelle: <https://science.mnhn.fr/>; Smithsonian Institution: <https://www.si.edu/>; The Linnean Collections: <http://linnean-online.org/>; Zingiberaceae Resource Centre: <http://padme.rbge.org.uk/ZRC/>). Field collection trips were planned and conducted in Kerala in October 2016. Metadata collection included scoring of morphological, phenological as well as ecological characters. Morphological measurements were taken using both rulers and digital calipers. Collections included dried specimens, spirit samples, and leaf tissues in silica for further studies (Fig. 2).

Results

Based on our field and herbarium studies, six species of *Hedychium* were identified from the Western Ghats. Brief descriptions for the species and their distribution, etymology, flowering and fruiting phenology were also provided here (Fig. 3).

1. *Hedychium coronarium* J.Koenig

It was described by Johann Gerhard Koenig in 1783 from a specimen collected in Java. It was the first *Hedychium* species described and is the type species of the genus. The



Fig. 2. Ajith Ashokan, at top, and Vinita Gowda, above, during a fieldwork in the Indian state of Nagaland. Picture Credit: Preeti Saryan, TrEE Lab, 2017

generic name *Hedychium* (Greek: hedy = sweet, chios = snow) refers to the beautiful white flowers and the heavenly aroma of *H. coronarium*. It is characterized by large clumps, conical inflorescence, much broader lateral staminodes, and a yellow or greenish-yellow blotch at the center of the labellum.

Distribution: India, Bangladesh, Bhutan, China, Nepal, Myanmar, Sri Lanka, Thailand, Malaysia, Indonesia, Philippines.

Etymology: The specific epithet refers to the garlanding or crowning nature of the inflorescence.

Common name: White butterfly ginger-lily; Flowering & Fruiting: June to November.

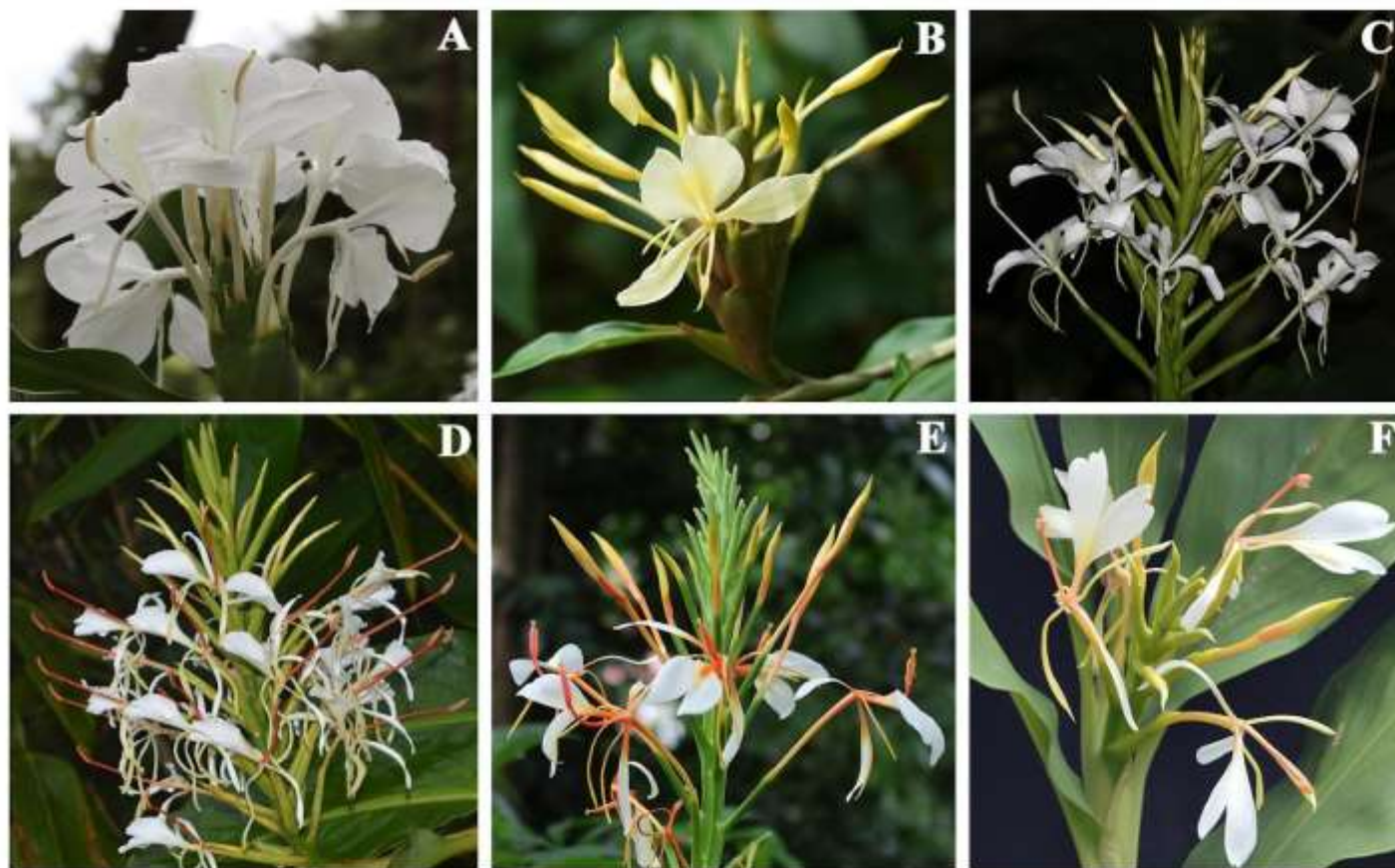


Fig. 3. Diversity of *Hedychium* in the Western Ghats. **A.** *H. coronarium*, **B.** *H. flavescens*, **C.** *H. forrestii*, **D.** *H. matthewii*, **E.** *H. spicatum*, **F.** *H. venustum*. Photo Credits: (**A, C, E**) Preeti Saryan. © Indian Institute of Science Education and Research (IISER) Bhopal. (**B**) Piyakaset Suksathan. © Queen Sirikit Botanic Garden. (**D**) Sinjumol Thomas. © Rapinat Herbarium. (**F**) Ajith Ashokan. © Indian Institute of Science Education and Research (IISER) Bhopal.

2. *Hedychium flavescens* Carey ex Roscoe

It was described by William Roscoe based on a specimen sent by William Carey in 1821. It has morphological similarities to both *H. coronarium* and *H. chrysroleucum*, and it can be easily distinguished from the golden yellow hairs on the ligule (only adaxial), lamina (only abaxial), and midrib.

Distribution: India, Sri Lanka, Nepal, China, Thailand

Etymology: The specific name refers to the pale yellow flowers.

Common name(s): Cream garland-lily, yellow ginger-lily;
Flowering: August to October; Fruiting: ?

3. *Hedychium forrestii* Diels

It was described by Ludwig Diels in 1912 from a specimen collected in China. The noteworthy characters are white flowers on open-tubular bracts, longer stamen compared to labellum, and a yellow or pale green blotch at the center of the labellum.

Distribution: India, China, Vietnam.

Etymology: The specific epithet honors George Forrest (1873-1932), a renowned Scottish botanist.

Synonym: *Hedychium dekianum* A.S.Rao & Verma.

4. *Hedychium matthewii* Sinj. Thomas, B. Mani & Britto

It was described by Sr. Sinju Mol Thomas, Bince Mani, and John Britto in 2015, from a specimen collected in South India. It is another large, clump-forming *Hedychium* that can be easily distinguished from the dense cylindrical inflorescence, folded inflorescence bracts, and multi-flowered cincinni. It is very similar to *H. spicatum* Buch.-Ham. ex Sm. but differs by cincinnus capacity, length, and stature of the stamen.

Distribution: India (Western Ghats).

Etymology: The specific epithet honors Rev. Dr. K.M. Matthew, India, for his contribution to Plant taxonomy.
Common name: ?; Flowering & Fruiting: June to October.

5. *Hedychium spicatum* Buch.-Ham. ex Sm.

It was described by Sir James Edward Smith in 1811 from a specimen collected by Francis Buchanan-Hamilton in Nepal. It is another large, clump-forming *Hedychium* that can be easily distinguished from the pendulous orientation of the deeply bilobed labellum, narrow lateral staminodes, and the recurved nature of the stamen.

Synonym: *Hedychium acuminatum* Roscoe.

Distribution: India, Nepal, Bhutan, Bangladesh, China, Myanmar, Thailand.

Etymology: The specific epithet refers to the spike (inflorescence type).

Common name: Spiked ginger-lily; Flowering & Fruiting: June to October.

6. *Hedychium venustum* Wight

It was described by Robert Wight in 1853 from a specimen collected in South India. It is another large, clump-forming *Hedychium* that can be easily distinguished from the pendulous orientation of the deeply bilobed labellum, narrow lateral staminodes, and the recurved nature of the stamen. It is very similar to *H. spicatum* Buch.-Ham. ex Sm. but differs by cincinnus capacity and stature of the anther.

Distribution: India (Western Ghats).

Synonym: *Hedychium cernuum* Wight.

Etymology: The specific epithet refers to the charming or graceful inflorescence (venustum = charming or graceful).

Common name: ?; Flowering & Fruiting: June to October.

Discussion and conclusions

Biodiversity hotspots represent excellent venues for understanding the ecological and evolutionary interactions among organisms. India is a megadiverse country that forms part of four biodiversity hotspots - The Western Ghats and Sri Lanka, Himalaya, Indo-Burma, and Sundaland. Among these four biodiversity hotspots, Western Ghats is completely within the jurisdiction of India and harbors a rich endemicity of flora and fauna in the country. Within the Western Ghats, out of six *Hedychium* species listed here, four were restricted to southern Indian states of Kerala and Tamil Nadu (or, the southern Western Ghats). We attempted to document the diversity of gingers in this region with a special interest in understanding their origin and diversification within the Indo-Malayan Realm (Ashokan et al., 2022). Our main objective is to fill the information gaps for many rare and endemic gingers from this region with detailed ecological data that would also help us to understand the population dynamics of these gingers. Among the six species of *Hedychium* identified in the Western Ghats, four species were restricted only to elevations above 1500 meters and the other two species were quite widespread. We also identified that *Hedychium* that are represented in the Western Ghats belong to either clade III or IV, with taxa representing clades I, II-densiflorum, and II-ellipticum, absent in this region (Ashokan et al., 2022).

Acknowledgments

We thank the State Forest Department of Kerala for the research permit and help during the plant collection. Funding was provided by CSIR-HRDG to A. Ashokan; Heliconia Society International to A. Ashokan; and MHRD and SERB to V. Gowda. We are grateful to IISER Bhopal for infrastructure and shade-house facility.

References

Ashokan, A., 2020. Phylogenetic systematics, historical biogeography and character evolution in the taxonomically complex genus *Hedychium* J.Koenig (Zingiberaceae). Doctoral dissertation. Madhya Pradesh: Indian Institute of Science Education and Research Bhopal, India.

Ashokan, A. and Gowda, V. 2019. *Hedychium ziroense* (Zingiberaceae), a new species of ginger lily from North-east India. *PhytoKeys* 117: 73–84. <https://doi.org/10.3897/phytokeys.117.24951>.

Ashokan, A., Xavier, A., Suksathan, P., Ardiyani, M., Leong-Škorničková, J., Newman, M., Kress, W.J. and Gowda, V. 2022. Himalayan orogeny and monsoon intensification explain species diversification in an endemic ginger (*Hedychium*: Zingiberaceae) from the Indo-Malayan Realm. *Molecular Phylogenetics and Evolution* 170:107440. <https://doi.org/10.1016/j.ympev.2022.107440>

Sabu, M., 2006. Zingiberaceae and Costaceae of South India. Indian Association for Angiosperm Taxonomy, Kerala.

Sanoj, E. 2011. Taxonomic Revision of the Genus *Hedychium* J. Koenig (Zingiberaceae) in India. Doctoral dissertation. Kerala: University of Calicut. Retrieved from Shodhganga. <http://hdl.handle.net/10603/80898>.

Vijayakumar, S.P., Menezes, R.C., Jayarajan, A. and Shanker, K. 2016. Glaciations, gradients, and geography: multiple drivers of diversification of bush frogs in the Western Ghats Escarpment. *Proceedings of the Royal Society B: Biological Sciences* 283: 20161011. <https://doi.org/10.1098/rspb.2016.1011>.

Editor's note: Diversity of the Genus *Hedychium*, Parts I, II and III were published in the Bulletin issues 23(2), 24 (3) and 26(3), respectively.

Heliconia species names and what they mean, Part II (see 27(2) for Part I)

Prepared by Dr. Richard Criley with contributions from Ana Cecilia R. Castro*

Note: Not all of these species names are currently accepted, but we include them because they appear in the literature. If you have additional information or insight to these names, please let us know.

Aemygdiana: honors Luiz Emygdio de Mello Filho, *Heliconia* specialist who first collected the species*



H. aemygdiana

Augusta: majestic, sometimes applied to recognize royalty.

Barryana: honors Dr. Barry Hammel, of the Missouri Botanical Garden and INBio, the Instituto Nacional de Biodiversidad in Costa Rica.

Bihai: from bijao, which is now widely used in Spanish-speaking countries as the common name for calatheas, especially the useful species

Caribaea: native to Caribbean islands.

Champneiana: named for K. Champney, a grower in Guatemala, honored by R.F. Griggs in 1903.

Chartacea: papery.

Collinsiana: named for G.N. Collins by R.F. Griggs in 1903.

Curtispatha: short-bracted.

Densiflora: densely flowered.

Distans: distant, separated.*

Ecuadoriensis: from Ecuador.

Elegans: elegant.

Elongata: elongated.

Episcopalis: resembles a bishop's cap.

Farinosa: floury covering.

Faunorum: forest-dwelling.

Fluminensis: endemic from Rio de Janeiro.*

Fugax: ephemeral, fleeting.

Golfodulcensis: named for



H. barryana



H. champneiana



H. episcopalis

the Golfo Dulce in southwestern Costa Rica where it was found.

Gracilis: slender, thin.

Griggsiana: honors botanist Robert F. Griggs.

Harrisiana: honors botanist William Harris.*

Hirsuta: hirsute, hairy.

Humilis: low-growing.

Ignescens: bright red, like a flame.

Imbricata: imbricate, overlapping scales.

Irrasa: unshaven.

Juruana: reference to Rio Juruá near Juruá-mirim, where it was found.*

Lankesteri: honors Charles Herbert Lankester (1879-1969), a noted naturalist in Costa Rica.

Latispatha: broad spathe.

Longiflora: long flower.

Lophocarpa: winged (angled) fruit.

Lutea: deep yellow.

Maculata: spotted or blotched: brown spotted pseudostem.*

Magnifica: magnificent.

Mathiasiae: named to honor UCLA professor of botany Mildred E. Mathias by G. Daniels 1979.

Metallica: metallic, referring to the sheen of the leaves.

Monteverdensis: of Monte Verde, Costa Rica.

Necrobacteata: dead bracts.



H. gracilis



H. ignescens



H. lankesteri

Nigrescens: becoming black.

Nigriprefixa: tips of bracts black.*

Orthotricha: straight hairs.

Pendula: hanging.

Pogonantha: bearded flower.

Platystachys: broad spike, broad stemmed.

Psittacorum: parrot-like, referring to its brilliant colors.

Pulverulenta: covered in powder.

Reticulata: reticulate, net-like, referring to the distinct pattern on the underside of the leaf.

Richardiana: Named for _____ by Dutch botanist F.A.W. Miquel in 1844.

Rivularis: pertaining to streams.

Robusta: robust.

Rodriguensis: Named for Venezuelan scientist G. Rodriguez by L. Aristeguieta.

Rodriguezii: honors Costa Rican botanist Dr. Rafael Lucas Rodriguez Caballero.

Rostrata: beaked.

Sarapiquensis: of Sarapiquí, Costa Rica.

Spathocircinata: refers to downward curled point (circinata) of the bract (spatho).

Stilesii: honors Dr. F. Gary Stiles.

Stricta: straight, upright.

Tortuosa: twisted in different directions.

Umbrophila: shade-loving.

Vaginalis: relating to a sheath.

Vellerigera: woolly.

Velloziana: honors priest and botanist J.C. Vellozo by Brazilian botanist L.E.M. Filho in 1975.

Wilsonii: named for Robert G. Wilson of the Las Cruces Tropical Botanical Garden in Costa Rica.

Xanthovillosa: yellow hairs.

Zebrina: striped.



H. pogonantha



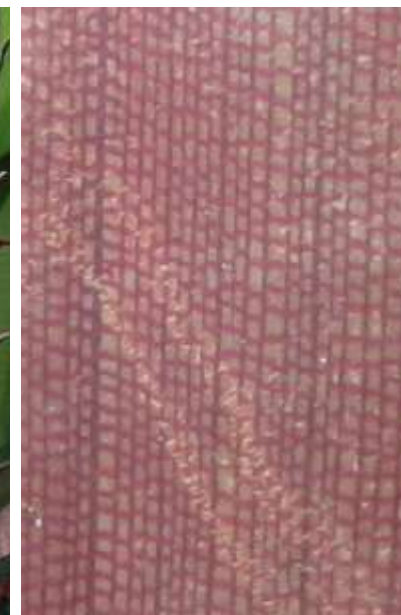
H. spathocircinata



H. platystachys



H. bihai



H. reticulata



H. richardiana



H. chartacea



H. magnifica



H. collinsiana



H. lophocarpa



H. rostrata



H. faunorum



H. latispatha



H. spathocircinata



H. longiflora



H. psittacorum Pearl



H. aemygdiana fruits

XXI CONFERENCE of the HELICONIA SOCIETY INTERNATIONAL COLOMBIA -

December 2022

Organizers: Heliconia Society International, Quindío Botanical Garden and Quindío University.

Date of the event: Monday, December 5 and Tuesday, December 6, 2022.

Venue: Quindío Botanical Garden (JBQ), Calarcá.

We invite you to Colombia, the northernmost of the South American countries and the geographical heart and center of all the Americas.

With a territory bathed by the two great oceans of the planet, crossed by three branches of the Andes mountains, and integrated into the Amazon basin, Colombia stands out for its enormous biological diversity. This land of contrasts between high mountains, deep valleys, jungles, humid forests and dry deserts, offers amazing nature and an incredible variety of wildlife.

Here, in this country with more than a hundred species of heliconias, the XXI Conference of the International Society of Heliconias will be held during the first days of December of this year.

Pre-event activities: Sunday, December 4, workshop on "Introduction to Botanical Illustration" and "Management and Cultivation of Heliconias".

Post-event tour: Wednesday, December 7 to 11, tour of Valle del Cauca: Nirvana Botanical Garden, Querebral, Anchicaya Valley and Sabaletas.

Save the dates! More information coming soon!

Abstracts of journal articles on *Hedychium*

The relationship between volatile release and structure of petals in four species of *Hedychium*

Fan, Y., Cao, H., Yu, R., Wang X. 2006. Abstract. S05-P-45 117:00-18:001. Abstracts 27th International Horticulture Congress & Exhibition, Seoul, Korea

Four species of *Hedychium*, *H. coronarium*, *H. flavum*, *H. gardnerianum* and *H. coccineum*, were selected as research materials. Determined by the technique of solid-phase microextraction and gas chromatography-mass spectrometry, the relative volatile contents in *H. coronarium*, *H. flavum* and *H. gardnerianum* were 17.7, 13.7 and 16.8 pg/g FW respectively, but in *H. coccineum* it was only 1.1 pg/g FW. The dissectional structure and the microstructure of the petal were observed by optical microscope and transmission electronic microscope. The

primary scent release was in the epidermis. Heteromorphosis cells were found in the epidermis which were related to volatile release. The shape and distribution density of these special cells imply volatile release. There were less dense cells in *H. coronarium* compared with the other three species. Cell density was tightest in *H. coccineum*, while that of *H. flavum* and *H. gardnerianum* was positioned in the middle. The densities of the middle-level cells were also related to volatile release. There were many black electron-density-high grains in the petal cells. The densities of the black grains were almost the same among *H. coronarium*, *H. flavum* and *H. gardnerianum*. These species had a high content of volatile release. The density of black grains was found to be very low and its surface was surrounded by membrane-like substance in the petal *H. coccineum*, which also had very low content of volatile release. The density and the structure of the black grains might also be related with scent production and release.

In vitro assisted breeding of *Hedychium* J. Koenig.

Sakhanokho, H..F., K. Rajsekaran, N. Tabanca, B.J. Sampson, D.E. Wedge, N. Islam-Faridi, C. T. Pounders, J.M. Speiers, L.M. Nychembeng. 2010. Abstract T09.039. Abstracts International Horticulture Congress, Lisbon, Portugal

Hedychium J. Koenig, one of the largest genera of Zingiberaceae, consists of species mostly native to central and southeastern Asia, southern China and the Himalayan region. These gingers are cultivated for their perfume essences. The essential oils of some species have been found to have insecticidal, antibacterial, and antifungal activities. These plants are increasingly being used as ornamentals worldwide because of their diverse and usually showy and scented flowers. They are planted in the landscape but generally too tall to be grown as potted plants. In 2004, a *Hedychium* breeding program was initiated at the USDA-ARS research station in Poplarville, Mississippi where new and efficient tissue culture protocols were developed for various *in vitro* manipulations, including the induction of polyploidy and mutagenesis in select cultivars and species. For example, tetraploidy was successfully induced in *Hedychium muluense*, one of the few dwarf species, using colchicine and oryzalin. In addition, variegated plants were obtained by induced *in vitro* somaclonal variation. Several studies were also carried out to investigate the biology of *Hedychium* pollen, including *in vitro* pollen germination, pollen nucleation, pollen:ovule ratio, and pollen ultrastructure. An *in vitro* pollen germination protocol using polyethylene glycol (PEG) was developed and successfully applied to germinate pollen in several *Hedychium* species and cultivars. This protocol also successfully assessed the viability of *Hedychium* pollen stored at various temperatures for various durations. These *in vitro* techniques are contributing to accelerate the development of new and improved *Hedychium* cultivars. Finally, using our efficient regeneration protocols (e.g. somatic embryogenesis), a transformation system is being developed to further broaden the possibilities for *in vitro* assisted breeding of *Hedychium*.

In this issue:

1. Treasure Hunt

Carlos Castro, Cecilia Castro and Vivian Loges

4. Back to the Tropics – my first post-pandemic trip to Latin America

Dave Skinner

**8. Diversity of the Genus *Hedychium*
J.Koenig (Zingiberaceae) in India -
IV: Western Ghats**

Ajith Ashokan and Vinita Gowda

**11. Heliconia species names and what
they mean, Part II**

Richard Criley and Ana Cecilia R. Castro

15. Conference information

***Hedychium* abstracts**

HSI Headquarters
Dr. David H. Lorence
National Tropical Botanical
Garden
3530 Papalina Road

HELICONIA
SOCIETY
INTERNATIONAL



Indigenous family Dave Skinner camped with in Narupa, Ecuador

Postage here

Addressee label here