

出國報告（出國類別：國際會議）

參加第六屆單子葉植物比較生物學
國際研討會之我見

服務機關：行政院農業委員會特有生物研究保育中心

姓名職稱：陳志輝 副研究員兼站主任

派赴國家：巴西

出國期間：107年10月5日至10月23日

報告日期：107年11月19日

摘要（200-300 字）

每 5 年 1 屆的單子葉植物國際研討會，是全世界關於單子葉植物最重要之學術活動，第 6 屆單子葉植物比較生物學國際研討會，由巴西國立北里約格蘭德大學（Universidade Federal do Rio Grande do Norte, UFRN）主辦，於 2018 年 10 月 8-12 日於巴西納塔爾的 Praiamar Natal Hotel & Convention 舉行。參加本次研討會，除了聆聽各方最新的研究成果之外，另外很重要的一項收穫是，結識許多研究單子葉植物的同行，都是目前在單子葉植物研究的核心人物及領先群；（三）在歐美先進國家，跨國的學術研究十分普遍，對岸中國大陸近年來積極參與歐美研究團隊，如此得以加入主流研究議題，我國學界也應積極參與。

目 次

一、目的.....	4
(一)第6屆單子葉植物比較生物學國際研討會(Monocot VI)歷史沿革.....	4
(二)預期目標.....	4
二、過程.....	5
(一)10月5日.....	5
(二)10月6日.....	5
(三)10月7日.....	5
(四)10月8日.....	5
(五)10月9日.....	5
(六)10月10日.....	6
(七)10月11日.....	6
(八)10月12日.....	7
(九)10月13-14日.....	8
(十)10月15日.....	8
(十一)10月16日.....	8
(十二)10月17-22日.....	8
(十三)10月23日.....	8
三、心得及建議.....	8
附錄一、照片及說明.....	10
附件一、與會證明書	
附件二、第6屆單子葉植物比較生物學國際研討會完整議程	

本 文

一、目的：

(一) 第 6 屆單子葉植物比較生物學國際研討會 (Monocots VI) 歷史沿革：

人類對單子葉植物的認識及了解，是奠基於 Dr. Rolf Dahlgren (1932~1987) 的研究成果，他過世後，由英國皇家植物園邱園 (Royal Botanical Garden, Kew) 於 1993 年開始，舉辦第 1 屆單子葉植物國際研討會，第 2 至第 5 屆分別是 1998 年於澳洲雪梨新南威爾斯大學 (University of New South Wales)，2003 年於美國洛杉磯聖塔安納植物園 (Rancho Santa Ana Botanic Garden)，2008 年於丹麥哥本哈根大學 (Copenhagen University)，2013 年於紐約植物園 (New York Botanical Garden) 舉辦。

第 6 屆單子葉植物比較生物學國際研討會，於 2018 年 10 月 8-12 日於巴西東北角的北里約格蘭德州 (Rio Grande do Norte) 的納塔爾 (Natal) 舉行，場地位於 Praiamar Natal Hotel & Convention，主辦單位是巴西國立北里約格蘭德大學 (Universidade Federal do Rio Grande do Norte, UFRN)，由巴西國家科學技術發展委員會 (Conselho Nacional de Desenvolvimento Científico e Tecnológico) 及高等教育改進委員會 (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) 共同支持贊助。

單子葉植物的部分類群原本有各自舉行的研討會，有些也整併到這個單子葉植物比較生物學國際研討會，例如第 7 屆禾本科植物系統分類學及演化國際研討會 (7th International Symposium on Grass Systematics and Evolution)、第 2 屆鳳梨科植物演化國際研討會 (2nd World Congress of Bromeliaceae Evolution – Bromevo 2)、以及第 3 屆新熱帶區天南星科植物研討會 (III Symposium on Neotropical Araceae)。

(二) 預期目標：

每 5 年 1 屆的單子葉植物研討會，是全世界關於單子葉及禾本科植物最重要的學術交流活動，因個人研究領域是禾本科植物的系統分類學研究，參加本研討會可與全世界相關學者專家進行交流，並建立聯繫及合作管道。

二、過程

(一) 10月5日：

搭乘長榮航空 BR52 班機，22:00 起飛，首站前往美國休士頓。因時差關係，抵達休士頓時當地時間仍是 5 日的 23:00。

(二) 10月6日：

接著在休士頓搭乘聯合航空 UA129 班機，21:55 起飛。

(二) 10月7日：

10:15 抵達巴西里約熱內盧，通關入境後，13:45 轉搭巴西國內線航班 GOL 航空 G32098 班機，16:40 抵達位於的納塔爾，隨後搭計程車前往本次研討會舉辦地點 Praiamar Natal Hotel & Convention (圖 1)，位於納塔爾的海濱渡假沙灘旁 (圖 2)，車程約 50 分鐘。

Praiamar Natal Hotel & Convention 也是飯店，這次也預訂了這裡的房間，抵達後先辦理入住手續，將行李安頓於房間後，便去辦理研討會報到。18:30 開始有一個簡單的開幕式 (圖 3) 及迎賓酒會，提供飲料及小點心。

(二) 10月8日：

今天正式開始研討會議程，早上從 08:00 到 11:30 共有新熱帶地區穀精草科 (Neotropical Eriocaulaceae: answering evolutionary questions and supporting sustainability)、薑目 I (Zingiberales I – Evolution)、形態解剖學 (Growing knowledge on monocot vegetative anatomy) 3 個主題分別於 3 個場地進行。

每天的 11:40 到 12:30 是專題演講 (keynote lecture)，今天由史密森尼學會 (Smithsonian Institution) 的 Dr. John W. Kress 主講，講題是 Monocots in the Anthropocene: species interactions in a rapidly changing world。

下午 14:00-17:30 有石蒜科 (Understanding Amaryllidaceae evolution using different approaches)、薑目 II (Zingiberales II – Diversity)、親緣基因組學 I (Monocot phylogenomics) 3 個主題分別於 3 個場地進行。

本次研討會照例有壁報發表的部分，因為場地不是很大，不足以將所有

壁報同時張貼，因此安排在研討會 5 天議程中輪流張貼（圖 4）。

（二）10 月 9 日：

上午有解剖學應用（How can anatomy contribute to understanding monocot evolutionary patterns?）、蘭科之演化及生物地理（Systematics, evolution, and biogeography of Orchidaceae）、基因組創新（Genomic Innovation through genome duplication: Examples from across Monocots）3個主題分別於3個場地進行。

今天的的專題演講是由美國愛荷華州立大學（Iowa State University, USA）Dr. Lynn G. Clark主講，講題是3D Biology: What we can learn from the “flat” grasses。

下午有CAM光合作用（The next generation of research on the evolution of Crassulacean acid metabolism: Integrating physiology, ecology, and genomics）、蘭花生態及保育（Orchid ecology and conservation）、棕櫚（Palms – The ecologically most diverse tropical plant family?）3個主題分別於3個場地進行。

今天大會另外有安排前往UFRN的植物標本館（圖5）參觀，也可以檢閱標本。UFRN植物標本館館藏大約25,000份標本，主要是來自巴西東北部的材料。標本館已完全數位化，所有標本的照片都可以線上搜尋

（<http://ufrn.jbrj.gov.br/v2/consulta.php>）來檢閱。

（二）10 月 10 日：

上午有穎花目解剖學（Advances in the anatomy of the large Poales clade）、親緣基因組學II（Monocot phylogenomics II – New insights on genome evolution, diversification and biogeography）、鳳梨科系統學（Recent advances in the systematics of Bromeliaceae）3個主題分別於3個場地進行。

今天的的專題演講是由瑞典哥騰堡大學（University of Gothenburg, Sweden）的Dr. Christine Bacon主講，講題是The road to evolutionary success: insights from *Mauritia flexuosa*。

下午有狗尾草屬（*Setaria* as a model system for monocot development and

biotechnology)、古植物地理 (Monocot mats on Gondwanan inselbergs: binding taxonomy, ecology and molecular aspects under a biogeographic view)、鳳梨科演化 (Linking macro- and microevolution in Bromeliaceae) 3個主題分別於3個場地進行。

(二) 10月11日:

上午有新熱帶區天南星科植物研討會I (III Symposium on Neotropical Araceae – Systematics and evolution)、禾草演化 (Biogeography, ecology and macroevolution of grasses)、鳳梨科生態生理學 (Ecophysiology of Bromeliaceae) 3個主題分別於3個場地進行。

今天的的專題演講是由德國歐登堡大學 (University Oldenburg, Germany) 的Dr. Gerhard Zotz主講, 講題是A Sceptic's view on scientific "facts" and "concepts"。

下午有新熱帶區天南星科植物研討會II (III Symposium on Neotropical Araceae – Floristics, morphology and evolution)、鳳梨科應用 (Applied botany: Use of comparative data in horticulture, reproductive biology and systematics of Bromeliaceae)、薯蕷目 (Advances in molecular phylogeny, systematics and evolution of Dioscoreales) 3個主題分別於3個場地進行。

晚上有一個需另外付費的大會晚宴 (Gala Dinner), 前往一家位於納塔爾市區的高級餐廳NAU Frutos do Mar, 品嚐道地巴西風味餐 (圖6)。座位並未事先安排, 很湊巧筆者今晚與本次研討會籌備委員會主席, UFRN動植物學系的Dr. Leonardo M. Versieux同桌, 也進行了良好的交流互動 (圖7)。

(二) 10月12日:

上午有鳳梨科研究進展 (Recent advances in Bromelioideae systematics, taxonomy, and evolution)、科普推廣 (Monocots in society and tools to spread knowledge about monocots)、禾草系統學I (Grass systematics and evolution – Plastome phylogenetics and the BOP Clade) 3個主題分別於3個場地進行。

今天的專題演講是由巴西國立伯南布哥大學的Dr. Marccus Alves主講，講題是Monocots in the Brazilian Flora 2020: Facilitate access to plant diversity。

下午有莎草科 (Evolution and Diversification in Cyperaceae)、禾草系統學II (Grass systematics, evolution and development – The PACMAD Clade) 2個主題分別於2個場地進行。

然後進行閉幕式，大會宣布本次研討會共有397人參與，以地主國巴西272人最多，其次是美國32人，英國18人，所有參加人員也留下共同合影 (圖8)。晚上則有一個慶祝晚會 (Closure happy hour)，有樂隊現場演奏，因為這次研討會的與會人員，近七成是地主國巴西人，在此展現了巴西熱情的一面，整個晚會歌唱舞蹈不斷，熱鬧非常。

(二) 10月13-14日：

參加為期2天的參訪行程，前往位於納塔爾西南330公里處的北塞拉內格羅 (Serra Negra do Norte) 的一個名為 Seridó 的生態試驗站，共有16人參加這個行程 (圖9)。早上07:00於飯店門口集合出發，沿途欣賞巴西的鄉間小鎮風光。由於十月是旱季的開始，因此十分乾燥且炎熱。今天先到北塞拉內格羅隔壁的凱科 (Caicó, 圖10)，在此住宿一晚。

隔天早上出發前往 Seridó 的生態試驗站，這個試驗站屬於聯邦政府層級，委託給北里約格蘭德大學就近管理，但根據試驗站管理人員表示，巴西的國家財政近年來並不理想，因此維護管理經費非常不足。這裡的植被是巴西特有的乾燥林地棲地 (圖11)，北里約格蘭德州近95%面積都被這種植被覆蓋，主要植物以豆科、仙人掌科和鳳梨科最多 (圖12)，因為是乾季，所以非常乾燥，地被的禾草都是乾枯的 (圖13)，但也有類似沙漠中綠洲的池塘存在 (圖14)。

中午回到凱科用完午餐後，就搭上巴士返程，約傍晚18:30回到納塔爾。

(二) 10月15日：

早上搭計程車前往納塔爾機場，準備搭乘 GOL 航空 G31589 班機，13:40準時起飛，17:05飛抵聖保羅，辦理出境後，轉搭聯合航空 UA63 班機，21:10

準時起飛。

(二) 10月16日：

清晨 05:25 飛抵美國休士頓。

(二) 10月17-22日：

停留休士頓，屬私人行程，個人請准休假辦理。22日凌晨 00:50，搭乘長榮航空 BR51 班機返國。

(二) 10月23日：

清晨 06:00 飛抵桃園機場，入境後轉搭高鐵及大眾運輸返回本中心，結束本次行程。

三、心得及建議

(一) 單子葉植物除了在生物科學研究上特殊價值外，對人類而言，單子葉植物也具有極高的經濟價值，包括我們的主食稻米、小麥、玉米、高粱、大麥、燕麥（禾本科），重要佐料薑（薑科），以及椰子、油棕（棕櫚科），有些地區的主食芋頭（天南星科）及山藥（薯蓣科），重要觀賞花卉蘭花（蘭科）及百合（百合科），重要水果鳳梨（鳳梨科）及香蕉（芭蕉科）等等不勝枚舉，因此加強單子葉植物的保育及種源蒐集，不僅可提升學術研究水平，亦是未來人類糧食安全議題的基礎。

(二) 參加本次研討會，很重要的一項收穫是，結識許多研究單子葉植物的同行，都是目前在單子葉植物研究的核心人物及領先群。例如在植物分子條碼領域權威之一，史密森尼學會自然史博物館的 Dr. John W. Kress（圖 15）、禾本科植物分子系統學權威之一，史密森尼學會植物學組的 Dr. Paul M. Peterson（圖 16）、英國皇家邱植物園標本館禾本科植物負責人 Dr. Maria S. Vorontsova（圖 17）、禾本科植物分子演化及親緣地理學權威之一的美國北伊利諾大學植物分子及生物資訊學中心的 Dr. Melvin R. Duvall（圖 18）、以及後起之秀在禾本科植物分子系統學領域有傑出成果的瑞士蘇黎世大學植物系統及演化研究所的 Dr. Yanis Bouchenak-Khelladi（圖 19）、英國皇家邱植物園蘭科植物資深研究員 Dr.

Mark W. Chase (圖 20) 等。

(三) 在歐美先進國家，跨國的學術研究十分普遍，常常可以看到一篇報告的共同作者，是分屬好幾個國家的。對岸中國大陸近年來積極參與歐美研究團隊，如此得以加入主流研究議題，增加曝光度，反觀我國則不夠積極。未來應加強建立國際合作，以融入研究主流，同時也有利於發表研究成果。

附錄一、照片及說明



圖 1、研討會舉行的地點：巴西納塔爾的 Praiamar Natal Hotel & Convention。

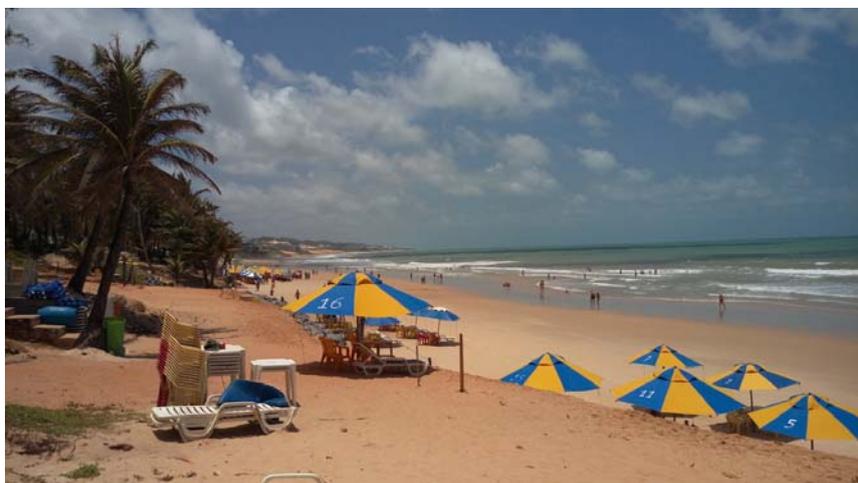


圖 2、研討會舉行的地點：位於巴西納塔爾的海濱度假沙灘旁。



圖 3、研討會的開幕式。



圖 4、壁報張貼展示區。



圖 5、研討會主辦單位巴西國立北里約格蘭德大學（UFRN）的植物標本館。



圖 6、參加需另外付費的大會晚宴（Gala Dinner）。



圖 7、與本次研討會的籌備委員會主席，UFRN 動植物學系的 Dr. Leonardo M. Versieux 合影。



圖 8、研討會閉幕式後全體參加人員合影。



圖 9、參訪北塞拉內格羅 Seridó 生態試驗站的 16 人合影。



圖 10、野外參訪的中繼站：小鎮凱科（Caicó）。



圖 11、巴西特有的乾燥林地棲地，北里約格蘭德州近 95%面積都被這種植被覆蓋。



圖 12、主要植物以豆科、仙人掌科和鳳梨科最多。



圖 13、極度乾燥的乾季，地被的禾草都是乾枯的。



圖 14、類似沙漠中綠洲的池塘。



圖 15、左 1 為史密森尼學會自然史博物館的 Dr. John W. Kress。



圖 16、右 2 為史密森尼學會植物學組的 Dr. Paul M. Peterson。



圖 17、筆者與英國皇家邱植物園標本館禾本科植物負責人 Dr. Maria S. Vorontsova 合影。



圖 18、筆者與美國北伊利諾大學植物分子及生物資訊學中心的 Dr. Melvin R. Duvall 合影。



圖 19、筆者與瑞士蘇黎世大學植物系統及演化研究所的 Dr. Yanis Bouchenak-Khelladi 合影。



圖 20、右 4 即英國皇家邱植物園蘭科植物資深研究員 Dr. Mark W. Chase。

全文完

Praiamar Natal Hotel & Convention, Natal - RN, Brazil

October 7th to 12th 2018



6TH INTERNATIONAL CONFERENCE ON COMPARATIVE BIOLOGY OF MONOCOTYLEDONS

MONOCOTS VI

CERTIFICATE

CHEN, CHIH-HUI

Attended the 6th International Conference on Comparative Biology of Monocotyledons (Monocots VI), in Natal, Rio Grande do Norte, Brazil, from October 07-12th, 2018. The Monocots VI included the 7th International Symposium on Grass Systematics and Evolution, the 2nd World Congress of Bromeliaceae Evolution - BromEvo 2, and the III Symposium on Neotropical Araceae.

Leonardo Versieux

Prof. Dr. Leonardo M. Versieux
Monocots VI Chairman

Hosted by



Sponsored by



Herbarium UFRN
<http://ufrn.jbrj.gov.br/>



6TH INTERNATIONAL CONFERENCE
ON COMPARATIVE BIOLOGY OF MONOCOTYLEDONS



**6th International Conference on Comparative Biology of
Monocotyledons**

7th International Symposium on Grass Systematics and Evolution

2nd World Congress of Bromeliaceae Evolution – Bromevo 2

III Symposium on Neotropical Araceae

Natal, Brazil

07– 12 October 2018



ORGANIZING COMMITTEE

Conference Development and Scientific Program – Local Committee

- Leonardo M. Versieux, Ph.D. – Chairman (Dept. of Botany and Zoology, UFRN)
- Alice Calvente, Ph.D. (Dept. of Botany and Zoology, UFRN)
- Fernanda Antunes Carvalho, Ph.D. (Dept. of Botany and Zoology, UFRN)
- Carlos Roberto Fonseca, Ph.D. (Dept. of Ecology, UFRN)
- Eduardo Voigt, Ph.D. (Dept. of Cell Biology and Genetics, UFRN)
- Juliana Espada Lichston, Ph.D. (Dept. of Botany and Zoology, UFRN)

Field Trip Organizers

- Jomar Gomes Jardim, Ph.D. (Institute of Humanities, Arts and Science, UFSB)
- Alan Roque, M.Sc. (Dept. of Botany and Zoology, UFRN)

Poster Session Coordinator and Herbarium Management

- Fernanda Antunes Carvalho, Ph.D. (Dept. of Botany and Zoology, UFRN)
- Anderson Lopes Fontes, M.Sc. (Dept. of Botany and Zoology, UFRN)

7th International Symposium on Grass Systematics and Evolution

- Reyjane Patrícia de Oliveira, Ph.D. (State Univ. of Feira de Santana, Bahia)
- Lynn G. Clark, Ph.D. (Iowa State University, USA - Bolsista PVE/CNPq/State Univ. of Feira de Santana, Bahia)
- Pedro Viana, Ph.D. (Museu Paraense Emilio Goeldi, Pará)

2nd World Congress on Bromeliaceae Evolution – BromEvo 2

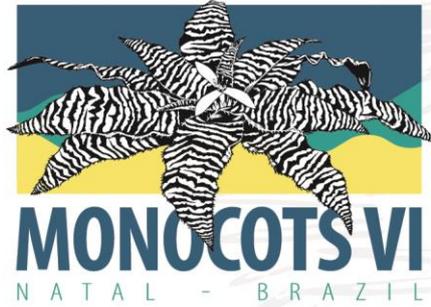
- Helenice Mercier, Ph.D. (Plant physiology, University of São Paulo)
- Tânia Wendt, Ph.D. (Dept. of Botany, Federal University of Rio de Janeiro)
- Clarisse Palma-Silva, Ph.D. (Dept. of Ecology, State Univ. of São Paulo)
- Leonardo M. Versieux, Ph.D. (Dept. of Botany and Zoology, UFRN)

III Symposium on Neotropical Araceae

- Ivanilza Moreira de Andrade, Ph.D. (Federal University of Piauí)
- Lívia Godinho Temponi, Ph.D. (Universidade Estadual do Oeste do Paraná)

Board of Counselors

- Adriana Pinheiro Martinelli, Ph.D. (Plant Biotechnology, University of São Paulo, CENA, Piracicaba, SP)
- Ana Maria Benko Iseppon, Ph.D. (Molecular biology, Federal University of Pernambuco)
- Cássio van den Berg, Ph.D. (Plant systematics and genetics, State Univ. of Feira de Santana, Bahia)
- Cynthia Fernandes Pinto da Luz, Ph.D. (Palynology, Institute of Botany, São Paulo)
- Francisco Prosdocimi, Ph.D. (Genomics and bioinformatics, Federal University of Rio de Janeiro)
- Joseph Williams Jr., Ph.D. (Plant evolutionary biology, The University of Tennessee, U.S.A.)
- Marccus Vinícius Alves, Ph.D. (Plant systematics and floristics, Federal University of Pernambuco)
- Maria da Graças Lapa Wanderley, Ph.D. (Institute of Botany, São Paulo)



- Rafaela Campostrini Forzza, Ph.D. (Plant systematics and collections, Jardim Botânico do Rio de Janeiro)
- Vera Lucia Scatena, Ph.D. (Plant morphology, UNESP, Rio Claro)

Students from UFRN working during the event:

- Ana Clara Cabral Davi
- Ana Paula Alves da Silva
- Amanda Brito da Silva
- Arthur de Souza Soares
- Brayan Paiva Cavalcante
- Eduardo Calisto Tomaz
- Gabriel Santos Garcia
- Gláucia Lidiane da Silva
- João Paulo Pereira da Câmara
- Joaquim Custódio Coutinho
- Leonardo Cruz de Souza
- Mariana Ramos Fantinati
- Mauricio Borges do Nascimento
- Mayara Luíza Alves Pereira
- Ricardo Ambrósio Soares de Pontes
- Talita Mota Machado
- Thais Ferreira da Rocha
- Vanessa Pulcheria
- Víctor de Paiva Moreira
- Viviane Ferreira de Oliveira

Monocots VI Secretariat / Herbário UFRN

Universidade Federal do Rio Grande do Norte
Centro de Biociências, Dept. de Botânica e Zoologia
Campus Universitário, Lagoa Nova
Natal, RN - Brasil 59078-970
Telephone. +00 55 84 32153443

Staff contacts for emergencies and information (WhatsApp):

Field Trips: Alan Roque +55 (84) 999346785 & Prof. Jomar Jardim (73) 991157115

Herbarium staff: Anderson Fontes +55 (84) 981771515 Prof. Leonardo Versieux +55 (84) 991445077, Profa. Alice Calvente (84) 994204840, Profa. Fernanda Carvalho (31) 996760505



Dear Monocot researcher, welcome!

Under the motto “Monocots for all: building the whole from its parts” we welcome researchers from different fields of investigation to participate in the Monocots VI Conference.

Venue: Praiamar Natal Hotel & Convention, Natal, Northeastern Brazil, from October 7th-12th, 2018.

The Universidade Federal do Rio Grande do Norte (UFRN - *Federal University of Rio Grande do Norte*) is promoting the event, which is sponsored by: **CNPq** - Conselho Nacional de Desenvolvimento Científico e Tecnológico (*National Council for Scientific and Technological Development*), **Capes** - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (*National Council for the Improvement of Higher Education*), and the **Bromeliad Society International**.

Sessions

The main subject sessions of Monocots VI are:

1. Systematics, evolution, biogeography
2. Morphology, development and cellular biology
3. Physiology and biochemistry
4. Ecology and conservation
5. Genetics, genomics and bioinformatics
6. Economic botany, plant breeding and agriculture
7. Monocots in society and tools to divulge knowledge about monocots

Time for symposia and keynote lectures: Symposia will be half-day programs. Individual talks in symposia are generally 30 minutes in length (including questions), or 15 minute talks. Time devoted to synthesis and discussion is encouraged. Symposium sessions will be from 08:00 to 10:00 a.m., followed by a coffee break, and continuing from 10:30 to 11:30 a.m. for the morning. At 11:40 a.m. the pre-lunch Keynote lecture starts, ending at 12:30 p.m. and is followed by lunch break until 2:00 p.m. The afternoon session runs from 2:00 to 4:00 p.m., followed by a coffee break, continuing from 4:30 to 5:30 p.m.

Keep Up to Date. Stay tuned as the 2018 Monocot VI Conference takes place. Check our Facebook page for updates and photos. Our website is www.monocots6.com. Use the hashtag **#monocots6** to mark your publications on social media.

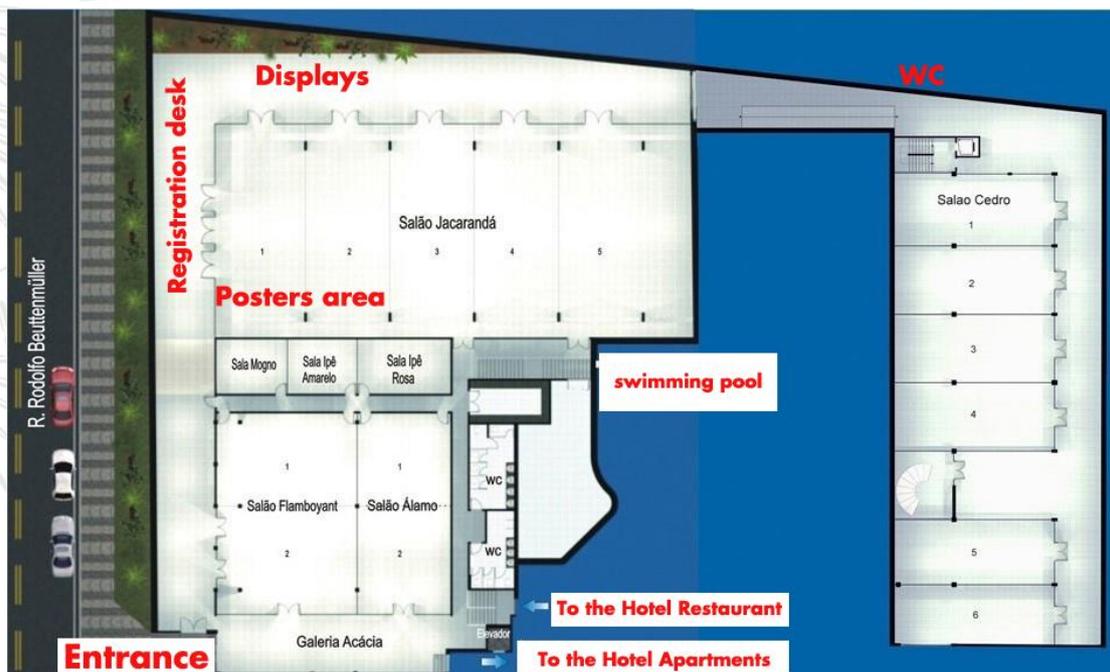
Official Travel agency: Harabello, they will be offering accommodation, flights and tours. <https://harabello.com/en/pacotes/monocots-vi/> WhatsApp: +55 84 999651566



General Information

Conference venue: The conference will take place at the Praiamar Natal Hotel & Convention (Rua Francisco Gurgel, 33, Ponta Negra, Natal). We will use rooms **Álamo, Flamboyant, and Jacarandá** (all plant names, but none of them monocots!), on the ground floor. All keynote lectures will be in the Jacarandá room.

Registrations desk: on Sunday, 07 October 2018, we will open only in the **afternoon**, from 13:00h to 17:30h. The main entrance is located close to the corner of the streets Rodolfo Beutenmüller and Francisco Gurgel (figure below). The registration desk will be open the whole week (08:00-19:30) to help you with general information, field trips and to sell mugs, t-shirts, souvenirs etc. Payments in cash only.



Corporate displays: Please visit the company and agency displays during breaks.

Refreshments: Water and coffee will be served in the main hall next to the displays and in Galeria Acacia (in front of Flamboyant Room) during the morning break (10:00-10:30). At the evening break (16:00-16:30) a complete coffee will be served with cookies, fruits, juices and cakes close to the posters area. Please use your reusable mug and avoid disposable plastics.

Lunch: The conference will not offer lunch. For lunch or dinner we suggest eating either in the excellent **Mangai Ponta Negra restaurant** (five blocks north from the Hotel, Rua Des. João Vicente da Costa, 8861, **which is offering 10% discount if you show your badge**) or in the hotel



(lunch in the hotel may vary from R\$30-55 and R\$44 for a complete meal for dinner, no drinks included). Also, there are many restaurants and bars around the hotel, which offer a “prato feito”, a single dish with rice and beans, meat and vegetables (very traditional in Brazil), which may vary from R\$12-20. For those who prefer lighter food for lunch, other economic options include “tapioca” (a cassava flour pancake with a variety of fillings such as eggs, cheese etc.) or “açai”, a kind of ice cream made of a palm fruit often eaten together with “cupuaçu” cream. Other restaurants sell food by the kilogram, and 1 kg of food either for lunch or dinner may cost from R\$50-70, so one average dish would cost around R\$30... Don't leave Natal without experiencing juices and ice creams made of local fruits such as cajá, cajarana, mangaba, graviola, cupuaçu...and drinking a lot of coconut water!

Social Program: *Opening ceremony:* Sunday 07 Oct 2018, 18:30h-21:00h, Praiamar Hotel. Free entrance to all registrants (please present your badge). Enjoy a tropical cocktail, with soft drinks and canapés in the conference hall after some welcoming words in the Jacarandá room.

Rock and roll party: Tuesday 09 Oct 2018, Sgt Pepper's Rock Bar. Bar will open at 20:00h, band starts at 22:00 – to midnight. Bar will close 02:00. R\$15 admission to be paid directly to the bar. Address: Rua Manoel Soares Medeiros, 230 - Ponta Negra, Natal.

Gala Dinner: Thursday, 11 Oct 2018, 20:30h-23:30h, **NAU Frutos do Mar**. Tickets for sale in advance in the merchandising area. Remaining tickets will be sold at the registration desk. Address: Av. Odilon Gomes de Lima, 1772 – Capim Macio, Natal. One bus with 27 seats is preliminarily scheduled to depart from the hotel at 20:00h.

Closure happy hour: Friday, 12 Oct 2018, 18:30, call your new friends for some drinks and appetizers in the garden of the PraiaMar Hotel. We will have music! Purchases of drinks and food are on your own, directly in the hotel bar.

Keynote lectures: Keynote lectures will occur every day in the Jacarandá room. These will be approx. 50 minutes in length, from 11:40-12:30.

Symposia: Symposium presentations have been arranged by the session organizers. Each slot will be 15 or 30 min.

Note to all speakers: Please pre-load your presentations onto the computer hard drive in your presentation room before the beginning of the session. PowerPoint presentations should avoid animations and videos and we suggest using the traditional size for slides (4:3), not the widescreen 16:9 (we also recommend you to bring a PDF backup copy of your presentation). Please arrive in your room 30 min early to load your presentation.

Note to all session chairs: Please arrive 30 min early to ensure that all of the AV equipment is working properly and that all PowerPoint presentations are loaded. There will be a student in each



room to assist and welcome you. Each room will be equipped with a laser pointer. Indicate to the speaker when 5 minutes remain and when 3 minutes remain. **Please stay on time.**

Poster presentations: Posters are organized by sessions. Please check the corresponding day of your poster presentation, according to the number of your poster (the Abstracts book is available for download in our website: general info -> archives). Some sessions were split to more effectively use the rented space inside the hotel. Posters should be affixed/hanged in the corresponding place **during the morning of the day of presentation**. Before our morning coffee break (10:00-10:30), a student from our team will check if all the posters are properly displayed. Our aim is that during the morning and afternoon (16:00-16:30) coffee breaks people also can view the posters. We expect, since this is a great chance to network and discuss findings, that at least one of the authors of the poster will be present from 17:30-18:30 (this is the official time for poster presentation). However, considering that some authors could not get funding to attend, the presence of the underlined author is **NOT** mandatory. **We will check (during the morning) if the poster is or is not displayed to generate the certificate.** There is no poster template (use your creativity) and keep in mind that the board where the poster will be affixed is 1 meter wide. So, we suggest that the final print size should be smaller than 1 m x 1 m to allow for a better display and space for margins. Posters not removed at the end of the day will be recycled. Certificates will be available only on-line and after the event.

Proceedings: Presenters of keynote lectures are expected to contribute to the proceedings. Presenters of symposium talks and posters also may be invited to contribute. If so, the submitting authors of the selected contribution will be informed during or shortly after the conference. All contributions will be reviewed and the proceedings will be published in the journal *Rodriguésia*, after the event.

Internet access: There is a basic wireless internet connection (WIFI) in the entire building. Login and password will be displayed close to the entrances of each room.

Visiting the Herbarium UFRN: The Herbarium UFRN holds around 25,000 specimens, and is particularly rich in material from the Brazilian northeast. Our herbarium is completely digitized and photos of all specimens may be searched online (<http://ufrn.jbrj.gov.br/v2/consulta.php>). If you wish to visit the Herbarium, please make prior arrangements by e-mail to herbarioufrn@gmail.com. Complete information, a campus map, and the bus itinerary to reach the UFRN campus and herbarium are available at our website: Program -> Herbarium visiting. The collection will be available for consultation on the morning of Saturday 13th.

Field trips: Please check at the registration desk for available spots for joining one of our three field trips, including Parque das Dunas Trilha da Peroba, Jenipabu, and Seridó. Field trips are guided by specialist professors.



Transportation: Transportation between the airport to the hotel area (Ponta Negra neighborhood): The fastest and most cost-effective way to reach the area of the event with comfort is by means of a conventional taxi (these are white cars with the **Taxi Aeroporto** blue logo that are parked outside the arrivals). **To ensure a 10% discount as a promotional fare for Monocots VI participants (R\$90 to Ponta Negra area), look for the Taxi Aeroporto salesman in a kiosk in front of the luggage belt number 5.** If you buy a round trip, the discount increases to 20%, R\$ 80 each way). You can also book your return to the airport by WhatsApp +55 84 99854-4259 or www.coopcon.com.br

By Bus – it is an option to travel from Ponta Negra to downtown and vice versa. In Ponta Negra, buses run along Avenida Engenheiro Roberto Freire. Fare: R\$ 3,65.

By Taxi - A taxi from Ponta Negra to downtown costs around R\$ 35 and other options include the Brazilian version of Uber, which is called 99Pop.

ATMs / Exchange bureaus close to the Praiamar Hotel

Vilarte Ponta Negra: Av. Engenheiro Roberto Freire, 4090 - Ponta Negra.

Praia Shopping: Av. Engenheiro Roberto Freire, 3132 - Capim Macio. This is also the closest mall.

Shopping: Natal is famous for cashew nuts and textiles and you will find a wide range of hammock and other cotton handcrafts in the Artesanato market (next to Praia Shopping).

Personal Safety Tips: Although most visits are trouble free, Natal, as most big cities in Brazil, may be dangerous. Even though the area where our event will take place has a lot of movement and night life, we suggest that you be alert and use common sense and take general precautions as applicable to other touristic underdeveloped countries. Here are some general tips (mostly from <https://www.lonelyplanet.com/brazil/safety> and <https://travel.gc.ca/destinations/brazil>).

Always use sunscreen, hats, or long-sleeved t-shirts while outdoors. Natal may reach maximum values of U.V. and severe sun burns may occur.

Insect repellents are suggested for outdoor activities, as Natal has cases of Dengue and Zika viruses.

Leave jewelry at home and don't walk around flashing iPhones, iPads, professional cameras, laptops, watches, and other expensive electronics.

If you are threatened by robbers, comply with their demands, since they may be armed and/or under the influence of drugs.



After dark, don't ever walk along empty streets, in deserted parks or on urban beaches.

Be discrete when counting or putting your money in your wallet. Check the windows and doors of your room for security, and don't leave anything valuable lying around.

Don't take anything unnecessary to city beaches (bathing suit, towel, small amount of cash – nothing else!). As rule, always keep an eye on your belongings, wherever you are.

As a rule, never book a tour from someone who approaches you unsolicited at the airport or on the street.

Exercise extreme caution when someone you don't know or trust offers you a drink of any kind or even cigarettes, sweets etc.

Pay a lot of attention when crossing streets and avenues, since most drivers do not stop for pedestrians.

If you are renting a car, be aware that Brazil has one of the highest road accident rates in the world. Driving is hazardous due to aggressive driving habits, a significant number of trucks and motorbikes, reckless passing, excessive speeds, poorly marked lanes, poor signage, construction and vehicles moving in the wrong direction on one-way streets.

Make sure you have travel insurance that covers medical expenses, including hospitalization abroad and medical evacuation, in case of illness or injury. Physicians and hospitals often expect immediate cash payment for medical care, so ensure you have access to sufficient funds.

If you have any emergency, useful telephones are: Ambulance (192), Police (190) and the contacts of the herbarium staff listed on page 3.

Keynote Lectures – Every day, from 11:40-12:30, always in the Jacarandá room.

Monday 08 October

W. John Kress, Ph.D. (Smithsonian Institution, USA):
Monocots in the Anthropocene: species interactions in a rapidly changing world

Tuesday 09 October

Lynn G. Clark, Ph.D. (Iowa State University, USA - Bolsista PVE/CNPq, State Univ. of Feira de Santana, Bahia)
3D Biology: What we can learn from the “flat” grasses



Wednesday 10 October

Christine Bacon, Ph.D. (University of Gothenburg, Sweden):
The road to evolutionary success: insights from *Mauritia flexuosa*

Thursday 11 October

Gerhard Zotz, Ph.D. (University Oldenburg, Germany & Smithsonian Tropical Research Institute, Panama):
A Sceptic's view on scientific "facts" and "concepts"

Friday 12 October

Marcus Alves, Ph.D. (Universidade Federal de Pernambuco, Brazil)
Monocots in the Brazilian Flora 2020: Facilitate access to plant diversity

Master Classes, from 19:00-21:00, always in the Jacarandá room.

Monday 08 October

Alexandre Antonelli, Ph.D. (University of Gothenburg, Sweden):
Evolution and biogeography with focus on the Neotropics

Tuesday 09 October

Nanuza Luíza de Menezes, Ph.D. (University of São Paulo, Brazil):
Plant anatomy as a science and adaptations of monocots from Brazilian rocky fields

Pre- and Post-Event Graduate courses offered by Programa de Pós-Graduação em Sistemática e Evolução – UFRN (inquiries about applications: ppgse.ufrn@gmail.com, courses will take place in the UFRN campus, Centro de Biociências)

- **Evolutionary Biogeography: Biodiversity Data from Field to Yield: 2 – 6 Oct.** Profs. Alexandre Antonelli & Alexander Zizka (University of Gothenburg, Gothenburg Global Biodiversity Centre, and iDiv). FULL! CLOSED FOR APPLICATIONS!
- **Evolution of Development of Plants: An introduction to comparative developmental biology: 15 – 26 Oct.** Prof. Joe Williams (Univ. of Tennessee, USA) OPEN FOR APPLICATIONS!
- **Evolution of plant reproduction: current topics: 29 Oct – 02 Nov**, Prof. Joe Williams (Univ. of Tennessee, USA) OPEN FOR APPLICATIONS!



Symposia: in alphabetical order – organizers

Advances in molecular phylogeny, systematics and evolution of Dioscoreales - Juan Viruel

Advances in the anatomy of the large Poales clade - Aline Oriani, Thales D. Leandro and Vera L. Scatena

Applied botany: Use of comparative data in horticulture, reproductive biology and systematics of Bromeliaceae - Leonardo M. Versieux

Biogeography, ecology and macroevolution of grasses - Maria Vorontsova, Lynn Clark and Elizabeth Kellogg

Ecophysiology of Bromeliaceae - Helenice Mercier

Evolution and diversification in Cyperaceae - Wayt Thomas

Genomic innovation through genome duplication: Examples from across Monocots - Michael McKain and Alex Harkess

Grass systematics and evolution—Plastome phylogenetics and the BOP Clade - Lynn Clark, Elizabeth Kellogg, R. Patrícia de Oliveira and Pedro Viana

Grass systematics, evolution and development—The PACMAD clade - Elizabeth Kellogg, Lynn Clark, R. Patrícia de Oliveira and Pedro Viana

Growing knowledge on monocot vegetative anatomy - Thales D. Leandro, Aline Oriani and Vera L. Scatena

How can anatomy contribute to understanding monocot evolutionary patterns? - Aline Oriani, Thales D. Leandro and Vera L. Scatena

III Symposium on Neotropical Araceae - systematics and evolution - Livia Godinho Temponi and Ivanilza Moreira de Andrade

III Symposium on Neotropical Araceae – floristics, morphology and evolution - Livia Godinho Temponi and Ivanilza Moreira de Andrade

Linking Macro- and microevolution in Bromeliaceae - Clarisse Palma da Silva

Monocot mats on Gondwanan inselbergs: binding taxonomy, ecology and molecular aspects under a biogeographic view - Luiza de Paula and Stefan Porembski

Monocot phylogenomics I - Thomas Givnish

Monocot phylogenomics II - new insights on genome evolution, diversification and biogeography - Oscar Alejandro Pérez Escobar, Thomas Givnish, Wolf L. Eiserhardt, William J. Baker

Monocots in society and tools to spread knowledge about monocots - Fernanda Antunes Carvalho and Leonardo M. Versieux

Neotropical Eriocaulaceae: answering evolutionary questions and supporting sustainability - Livia Echternacht

Orchid ecology and conservation - Edlley Pessoa

Palms – The ecologically most diverse tropical plant family? - Wolf L. Eiserhardt

Recent advances in Bromelioideae systematics, taxonomy, and evolution - Georg Zizka, Elton Leme and Juraj Paule

Recent advances in the systematics of Bromeliaceae - Leonardo M. Versieux



Setaria as a model system for monocot development and biotechnology - Adriana Pinheiro Martinelli and Marcio Alves-Ferreira

Systematics, evolution, and biogeography of Orchidaceae - Edlley Pessoa

The next generation of research on the evolution of Crassulacean acid metabolism: integrating physiology, ecology, and genomics - Karolina Heyduk

Understanding Amaryllidaceae evolution using different approaches - Antonio Campos-Rocha, Alan William Meerow and Julie Henriette Antoinette Dutilh

Zingiberales I - Evolution - Thiago Andre and Fernando Figueiredo

Zingiberales II - Diversity - Thiago Andre and Fernando Figueiredo

Symposia organized by day:

Monday 08 October, morning

Neotropical Eriocaulaceae: answering evolutionary questions and supporting sustainability. Monday 08 October 8:00-11:30 Room: Álamo

Zingiberales I – Evolution. Monday 08 October 8:00-11:30 Room: Flamboyant

Growing knowledge on monocot vegetative anatomy. Monday 08 October 8:00-11:30 Room: Jacarandá

Monday 08 October, afternoon

Understanding Amaryllidaceae evolution using different approaches. Monday 08 October 14:00-17:30 Room: Álamo

Zingiberales II – Diversity. Monday 08 October 14:00-17:30 Room: Flamboyant

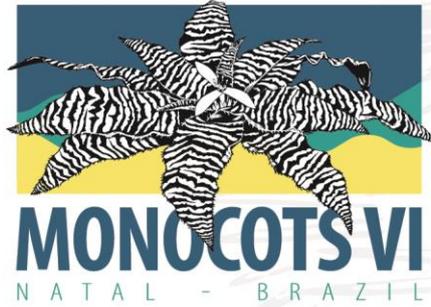
Monocot phylogenomics. Monday 08 October 14:00-17:30 Room: Jacarandá

Tuesday 09 October, morning

How can anatomy contribute to understanding monocot evolutionary patterns? Tuesday 09 October 8:00-11:30 Room: Álamo

Systematics, evolution, and biogeography of Orchidaceae. Tuesday 09 October 8:00-11:30 Room: Flamboyant

Genomic Innovation through genome duplication: Examples from across Monocots. Tuesday 09 October 8:00-11:30 Room: Jacarandá



Tuesday 09 October, afternoon

The next generation of research on the evolution of Crassulacean acid metabolism: Integrating physiology, ecology, and genomics. Tuesday 09 October 14:00-17:30 Room: Álamo

Orchid ecology and conservation. Tuesday 09 October 14:00-17:30 Room: Flamboyant

Palms – The ecologically most diverse tropical plant family? Tuesday 09 October 14:00-17:30 Room: Jacarandá

Wednesday 10 October, morning

Advances in the anatomy of the large Poales clade. Wednesday 10 October 8:00-11:30 Room: Álamo

Monocot phylogenomics II – New insights on genome evolution, diversification and biogeography. Wednesday 10 October 8:00-11:30 Room: Flamboyant

Recent advances in the systematics of Bromeliaceae. Wednesday 10 October 8:00-11:30 Room: Jacarandá

Wednesday 10 October, afternoon

Setaria as a model system for monocot development and biotechnology. Wednesday 10 October 14:00-17:30 Room: Álamo

Monocot mats on Gondwanan inselbergs: binding taxonomy, ecology and molecular aspects under a biogeographic view. Wednesday 10 October 14:00-17:30 Room: Flamboyant

Linking macro- and microevolution in Bromeliaceae. Wednesday 10 October 14:00-17:30 Room: Jacarandá

Thursday 11 October, morning

III Symposium on Neotropical Araceae – Systematics and evolution. Thursday 11 October 8:00-11:30 Room: Álamo

Biogeography, ecology and macroevolution of grasses. Thursday 11 October 8:00-11:30 Room: Flamboyant

Ecophysiology of Bromeliaceae. Thursday 11 October 8:00-11:30 Room: Jacarandá



Thursday 11 October, afternoon

III Symposium on Neotropical Araceae – Floristics, morphology and evolution. Thursday 11 October 14:00-17:30 Room: Álamo

Applied botany: Use of comparative data in horticulture, reproductive biology and systematics of Bromeliaceae. Thursday 11 October 14:00-17:30 Room: Flamboyant

Advances in molecular phylogeny, systematics and evolution of Dioscoreales. Thursday 11 October 14:00-17:30 Room: Jacarandá

Friday 12 October, morning

Recent advances in Bromelioideae systematics, taxonomy, and evolution. Friday 12 October 08:00-11:30 Room: Álamo

Monocots in society and tools to spread knowledge about monocots. Friday 12 October 8:00-11:30 Room: Flamboyant

Grass systematics and evolution – Plastome phylogenetics and the BOP Clade. Friday 12 October 8:00-11:30 Room: Jacarandá

Friday 12 October, afternoon

Evolution and Diversification in Cyperaceae. Friday 12 October 14:00-17:30 Room: Álamo

Grass systematics, evolution and development – The PACMAD Clade. Friday 12 October 14:00-17:30 Room: Jacarandá

The complete version of this program and the abstracts of talks/posters are available on-line and as PDFs files to be downloaded from our website: general info -> archives. More general information about the event and Natal may be seen at our website.

We wish all the participants an excellent week, with lots of learning, knowledge exchange, new friends and monocots!



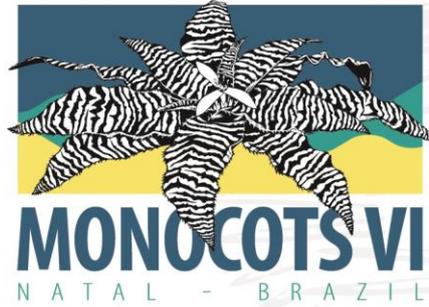
MONDAY 08 OCTOBER (8:00-11:30)

Neotropical Eriocaulaceae: answering evolutionary questions and supporting sustainability

Organizer: Livia Echternacht Room: Álamo

Eriocaulaceae are unique among the Monocots for its inflorescences in capitula. Most of its diversity is endemic to Brazil, especially in savannas and *Campos Rupestres*. Their inflorescences are traded as everlasting plants, contributing to local economies and culture. This symposium aims to integrate results in the fields of morphology, taxonomy, phylogeny, evolution, population ecology, biogeography, conservation, and applied botany.

Speaker	Topic	Time
Livia Echternacht (Federal University of Ouro Preto - Brazil)	Eriocaulaceae in time and space revealing patterns of diversification in the savannas and <i>Campos Rupestres</i>	08:00-08:30
Maurício Takashi Coutinho Watanabe (Vale Institute of Technology - Sustainable Development - Brazil)	Everlasting flowers: are molecular data solving systematic issues at last?	08:30-09:00
Arthur de Lima Silva (São Paulo State University, Rio Claro - Brazil)	What do floral morphology and ontogeny tell us about the evolution of Eriocaulaceae?	09:00-09:30
Ana Maria Giulietti-Harley (State University of Feira de Santana – Brazil)	Taxonomy and phylogeny of <i>Leiothrix</i>	09:30-10:00
Marcelo Trovó (Federal University of Rio de Janeiro - Brazil); Fabiane Nepomuceno da Costa (Federal University of Vales do Jequitinhonha and Mucuri - Brazil)	Diversity and the steps towards the Brazilian Flora 2020	10:30-11:00
Closure	All participants	11:00-11:30



Zingiberales I – Evolution

Organizers: Thiago André and Fernando Figueiredo Room: Flamboyant

Zingiberales is a diverse pantropical order of understory giant herbs with roughly 100 million years of history. Recent years have seen remarkable advances in Zingiberales biological studies, ranging from natural history and ecology all the way through development, evolution, paleobiology up to systematics. Here most updated research with the Zingiberales will be integrated in two sections treating the evolution, systematics, and diversity.

Speaker	Topic	Time
Chelsea Specht (Cornell University - USA)	Zingiberales phylogeny and evolution	08:00-08:30
Selena Y. Smith (University of Michigan - USA)	The fossil record of the Zingiberales	08:30-09:00
Alexandra C. Ley - (Martin Luther University Halle-Wittenberg - Germany)	The evolution of epigynal glands in Zingiberales	09:00-09:30
Vinita Gowda (Indian Institute of Science Education and Research - India)	Origin of species complexes in gingers: a molecular and ecological approach to resolve taxonomic differences	09:30-10:00
Ajith Ashokan (Indian Institute of Science Education and Research - India)	Biogeography and floral evolution of the ginger lilies (<i>Hedychium</i> spp., Zingiberaceae) as inferred from a molecular phylogenetic approach	10:30-11:00
Thiago André (Federal University of Western Pará - Brazil)	Speciation and morphological evolution in spiral gingers (Costaceae)	11:00-11:30

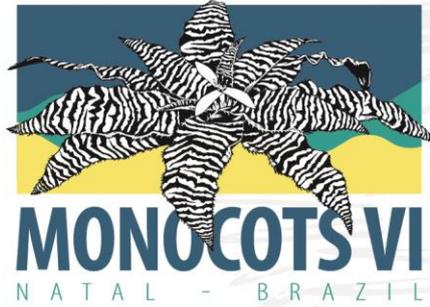


Growing knowledge on monocot vegetative anatomy

Organizers: Thales D. Leandro, Aline Oriani and Vera L. Scatena Room: Jacarandá

This symposium aims to disseminate relevant results on monocot vegetative anatomy. By using modern techniques, new data on root and stem functional anatomy, stem biomechanics, lateral meristems, and leaf anatomy and vasculature will be presented, including examples within Alismatales, Asparagales, and Poales.

Speaker	Topic	Time
Renata Schnablova (Institute of Botany of the Czech Academy of Sciences - Czech Republic)	A comparative study of shoot apical meristem and plant body organization with an emphasis on monocots	08:00-08:30
Linnea Hesse (University of Freiburg - Germany)	Functional anatomy, biomechanics and development of the branch-stem-attachment of <i>Dracaena marginata</i> revealed using high-resolution MRI	08:30-09:00
Aline Redondo Martins (São Paulo State University - Brazil)	The Phoenix of the Cerrado: anatomical explanation to the rapid response of <i>Bulbostylis paradoxa</i> to fire	09:00-09:30
Dmitry D. Sokoloff (Lomonosov Moscow State University - Russia)	Leaf structure in Alismatales with an emphasis on evolution of 3D vasculature	09:30-10:00
Shirley Martins (State University of Western Paraná – Brazil)	Evolution of Kranz anatomy in Cyperaceae.	10:30-11:00
Ana Sílvia Franco Pinheiro Moreira (Federal University of Uberlândia - Brazil)	The velamen of epiphytic orchids: variation in structure and correlations with water and nutrient absorption.	11:00-11:30



MONDAY 08 OCTOBER (14:00-17:30)

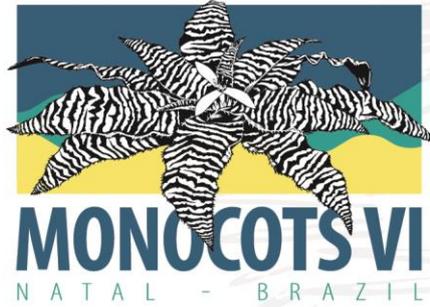
Understanding Amaryllidaceae evolution using different approaches

Organizers: Antonio Campos-Rocha, Alan William Meerow and Julie Henriette Antoinette

Dutilh Room: Álamo

This symposium aims to aggregate South American, North American and European researchers from different scientific areas to present their most recent investigations in the Amaryllidaceae family.

Speaker	Topic	Time
Agostina Belén Sassone (Darwinion Botanical Institute - Argentina)	Revealing the evolutionary history of tribe Leucocoryneae (Allioideae) based on molecular, morphological and cytogenetic data	14:00-14:15
Alan William Meerow (United States Department of Agriculture - USA)	Evolutionary patterns in the tetraploid Andean clade of Amaryllidaceae, with an emphasis on tribe Eucharideae	14:15-14:30
Antonio Campos Rocha Neto (State University of Campinas - Brazil)	Systematic studies of the Brazilian endemic tribe Griffinieae	14:30-14:45
Edimar Faria Menezes Lopes (State University of Campinas - Brazil)	The Griffinieae tribe: using leaf anatomy to help solve delimitation problems	14:45-15:00
Jaume Bastida Armengol (University of Barcelona - Spain)	The Amaryllidaceae as a sustainable source of natural products	15:00-15:15
John David (Royal Horticultural Society - United Kingdom)	Phylogenetic analysis of the Strumariinae sheds light on generic concepts in the tribe	15:15-15:30
Jordan Bilsborrow (University of Reading - United Kingdom)	Population genetics of <i>Narcissus</i>	15:30-15:45
Kalman Könyves (Royal Horticultural Society - United Kingdom)	Whole chloroplast genome analysis in <i>Narcissus</i> and its implications for our understanding of the evolution of the genus	15:45-16:00
Nathalia Susin Streher (State University of Campinas - Brazil)	Lessons from flowering time	16:30-16:45



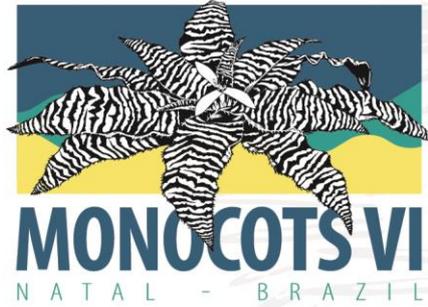
Nicolás García Berguecio (University of Chile - Chile)	Generic taxonomy of Amaryllidaceae tribe Hippeastreae	16:45-17:00
Nora H. Oleas (Technological Amerindian University – Ecuador)	Complex population histories of <i>Phaedranassa</i> species endemics in Ecuador	17:00-17:15
Closure	All participants	17:15-17:30

Zingiberales II – Diversity

Organizers: Thiago Andre and Fernando Figueiredo Room: Flamboyant

Zingiberales are organized in 8 families, more than 90 genera and about 2,000 species. Recent years have seen remarkable advance in ecological, phylogenetics and biogeographical studies which will be discussed in this second section of the Zingiberales meeting.

Speaker	Topic	Time
Flavia Costa (National Institute of Amazonian Research - Brazil)	Functional and biogeographical patterns of Zingiberales in the Amazon	14:00-14:30
Monica Carlsen and W. John Kress (Smithsonian Institution - USA)	<i>Heliconia</i> diversity and diversification: coevolution at work	14:30-15:00
Eugenio Valderrama (El Bosque University - Colombia)	Explaining the differences in African and Neotropical species richness by comparing diversification rates in <i>Renanthera</i> (Zingiberaceae)	15:00-15:30
Mohamed Al-Gharaibeh - (Martin Luther University Halle-Wittenberg - Germany)	A revised phylogeny of the family Marantaceae	15:30-16:00
Mariana Saka (São Paulo State University - Brazil)	Phylogeny and taxonomy of the extra-Amazonian species of <i>Goepertia</i> (Marantaceae)	16:30-17:00
Fernando Figueiredo (National Institute of Amazonian Research - Brazil)	Diversification dynamics of Marantaceae in Amazonia: the role of landscape transformation and functional strategies	17:00-17:30

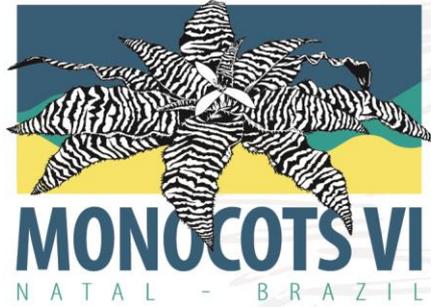


Monocot phylogenomics

Organizer: Thomas Givnish Room: Jacarandá

Phylogenomic approaches are rapidly spreading and provide a quantum leap in the power of analyses of evolutionary relationships within and among families of monocots. This symposium highlights the latest contributions by an international group of junior and senior researchers, using plastome-scale data to infer relationships among green and mycoheterotrophic species, reconstruct historical biogeography and patterns of net species diversification, assess patterns of organellar genome evolution during the transition to mycoheterotrophy, and analyze relationships and patterns of molecular evolution based on hundreds of nuclear loci. Collectively, these studies are helping revolutionize our understanding of monocot evolution.

Speaker	Topic	Time
Thomas Givnish* (University of Wisconsin-Madison - USA), Daniel Spalink (University of Utah - USA), Alejandro Zuluaga (University of Valle - Colombia), Sean Graham (University of British Columbia - Canada), Craig Barrett (West Virginia University - USA), Chodon Sass (University of California at Berkeley - USA), Chelsea Specht (Cornell University - USA), and Cécile Ané (University of Wisconsin-Madison - USA)	Monocot plastid phylogenomics, species diversification, and the power of multi-gene analyses	14:00-14:30
Katharina Nargar (James Cook University - Australia)	Evolution of hyperdiverse Dendrobieae (Orchidaceae) in time and space: phylogenomic insights	14:30-15:00
Danilo José Lima de Sousa* (State University of Feira de Santana - Brazil), Ana Maria Giulietti Harley (vale technology institute - Brazil), Spencer C. H. Barrett (University of Toronto - Canada), and	A phylogenomic study of Pontederiaceae, Commelinales	15:00-15:15



Sean W. Graham (University of British Columbia - Canada)		
Sean William Graham* (University of British Columbia - Canada), Qianshi Lin (UBC - Canada), Wesley Gerelle (UBC - Canada), Nathaniel Klimpert (UBC - Canada), Vincent S.F.T. Merckx (Naturalis Biodiversity Center, Leiden University - Netherlands), Vivienne K.Y. Lam (UBC - Canada), and Marybel Soto Gomez (UBC -Canada)	Phylogenomics and comparative organellar genomics of monocot mycoheterotrophs and their green relatives	15:15-15:30
Craig Barrett (West Virginia University - USA) and Brandon Sinn (West Virginia University - USA)	Genome evolution in heterotrophic orchids	15:30-16:00
James Leebens-Mack (University of Georgia - USA)	A nuclear phylogenomic view of monocot diversification	16:30-17:00
Michael McKain (University of Alabama - USA)	Comparative analysis of genome evolution across monocots	17:00-17:30

TUESDAY 09 OCTOBER (08:00-11:30)

How can anatomy contribute to understanding monocot evolutionary patterns?

Organizers: Aline Oriani, Thales D. Leandro and Vera L. Scatena Room: Álamo

This symposium aims to present recent advances on reproductive anatomy of monocots, including examples of different orders such as Dioscoreales, Pandanales, Zingiberales and Poales. Data on floral anatomy and development, inflorescences patterns, and fruit anatomy will be presented under an evolutionary perspective.

Speaker	Topic	Time
Chelsea Specht (Cornell University - USA)	Adaptation of monocot flower form: an evo-devo approach to study adaptive evolution in flower morphology	08:00-08:30



Bruce K. Kirchoff (The University of North Carolina Greensboro - USA)	Floral anatomy and development of Zingiberales	08:30-09:00
Elaine L. P. Nunes (Federal University of Paraná - Brazil)	Floral development in Orchidaceae: evolutionary origin of the calyculus in Dendrobieae	09:00-09:30
Margarita V. Remizowa (Lomonosov Moscow State University - Russia)	Evolution of syncarpy in monocots	09:30-10:00
Thomas Stützel (Ruhr-University Bochum - Germany)	Evolution of the inflorescences in monocots	10:30-11:00
Marcela Thadeo (State University of Maringá - Brazil)	Anatomy of fresh fruits in monocots	11:00-11:30

Systematics, evolution, and biogeography of Orchidaceae

Organizer: Edlley Pessoa Room: Flamboyant

Currently, we enjoy somewhat stability to the orchid classification, it is a result of years of phylogenetic studies which have been developed in the last two decades to its main clades. Now, the next challenging step is to understand the evolution at lower taxonomic levels and investigate biogeographical patterns. This symposium will be focused on recent studies based on modern methods in systematics, evolution, and biogeography of Orchidaceae.

Speaker	Topic	Time
Adam Karremans (University of Costa Rica - Costa Rica)	Pleurothallidinae, are we there yet?	08:00-08:30
Cássio van den Berg (State University of Feira de Santana - Brazil)	Pushing the limits: Assessing the Performance of nrITS for Phylogenetic Reconstruction and Molecular Dating of Orchids	08:30-09:00
Halisson Rafael Kedrovski (Universidade Estadual de São Paulo - Brazil)	Morphological diversity of pleurothallids roots	09:00-09:30
Carla Royer (Universidade Estadual de São Paulo/Brazil)	Origin and homology of complex structures in flowers of the <i>Ornithocephalus</i> clade (Oncidiinae, Orchidaceae)	09:30-10:00



Katharina Nargar (The Commonwealth Scientific and Industrial Research Organism - Australia)	Evolution of Australia's rich endemic orchid flora in time and space – phylogenomic insights	10:30-11:00
Oscar Perez-Escobar (Royal Botanic Gardens - UK)	Origin and diversification of Neotropical orchids in the Andes	11:00-11:30

Genomic Innovation through Genome Duplication: Examples from across Monocots

Organizers: Michael McKain and Alex Harkess Room: Jacarandá

This symposium will highlight cutting-edge research on the impact of whole genome duplication as it relates to species diversity, physiological novelty, development gene network, and ecological adaptations. Speakers will cover a wide diversity of species, including crops, while providing a genome level overview of monocot evolution. Featured techniques range from transcriptomics and sequence capture to whole genome sequencing and demonstrate the wide array of evolutionary genomic research found in the monocots.

Speaker	Topic	Time
Alex E. Harkess (Donald Danforth Plant Science Center - USA)	Origins of a Novel Monocot Dicer-like Protein	08:00-08:30
Michael R. McKain (University of Alabama - USA)	Genomic Plasticity in Prairie Grasses	08:30-09:00
Craig Barrett (University of West Virginia – USA)	Genome Expansion in Palms	09:00-09:30
Madelaine Barrett (University of Massachusetts Amherst - USA)	Gene network duplication and novel development in maize	09:30-10:00
Karolina Heyduk (University of Georgia - USA)	Alternative paralog usage across independent origins of CAM in monocots	10:30-11:00
Monica Carlsen (Missouri Botanical Gardens – USA)	Polyploidy and Zingiberales Diversification	11:00-11:30



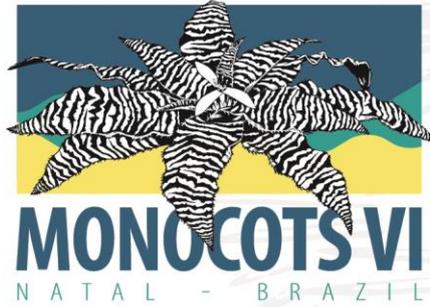
Tuesday 09 October (14:00-17:30)

**The next generation of research on the evolution of Crassulacean acid metabolism:
integrating physiology, ecology, and genomics**

Organizer: Karolina Heyduk Room: Álamo

In this symposium, we will highlight the latest work by both classic scholars of CAM biology and the newest crop of CAM researchers. Recent developments in sequencing technology have made genomic sequences for non-model species a reality, and genome sequences now exist or are underway in all major monocot CAM lineages. Paired with classical work in physiology and ecology, the field of CAM biology is now poised to make great strides in advancing our understanding of CAM genomics. This integration of disciplines across plant biology is critical for the future success of CAM research. To that end, the symposium will focus on the many fields of plant biology that are required to address fundamental questions of CAM evolution in the monocots, including genomics, physiology, ecology, and economic botany.

Speaker	Topic	Time
Christian Lexer (University of Vienna - Austria)	Exploring CAM evolution in <i>Tillandsia</i> (Bromeliaceae) with phylogenomics, transcriptomics, and metabolite profiling	14:00-14:30
Karolina Heyduk (University of Georgia - USA)	Evolution of CAM across the Agavoideae	14:30-15:00
Paulo Mito (Universidade Federal de Santa Catarina – Brazil)	CAM regulation by nitric oxide in the epiphytic bromeliad <i>Guzmania monostachia</i>	15:00-15:30
Katia Silvera (University of California Riverside)	Evolution and comparative ecophysiology of Crassulacean Acid Metabolism in tropical orchids	15:30-16:00
Ana Z. Gonçalves (University of São Paulo - Brazil)	Rubisco activity and the efficiency of photosynthesis in the C3-CAM bromeliad <i>Guzmania monostachia</i>	16:30-17:00
Closure	All participants	17:00-17:30



Orchid Ecology and Conservation

Organizer: Edlley Pessoa Room: Flamboyant

Orchids have aroused the curiosity of researchers for centuries, including Darwin, mainly for their different ecological traits and pollination syndromes. Currently, with the development of modern molecular, statistical and computational methods, ecological research has embraced other fields such as evolution and conservation. This symposium will be focused on studies relying on multi-tool approaches, encompassing conservation, animal/plant interaction, and environment/orchids interaction.

Speaker	Topic	Time
Ana Paula Moraes (Federal University of ABC - Brazil)	How chromosomes could limit orchid distribution?	14:00-14:30
Mark Chase (Royal Botanic Gardens, Kew/UK)	Macro- and microevolutionary drivers of allopolyploid evolution in <i>Dactylorhiza</i> (Orchidaceae)	14:30-15:00
Michael Fay (Royal Botanic Gardens - UK)	Research in support of orchid conservation and reintroduction	15:00-15:30
Paulo Milet Pinheiro (Federal University of Pernambuco - Brazil)	Ecology of floral perfumes in the Neotropical orchid genus <i>Catasetum</i> : does chemical composition predict pollinating orchid bee genera?	15:30-16:00
Samantha Koehler (State University of Campinas - Brazil)	How is polyploidy in <i>Zygopetalum mackayi</i> orchids related to biotic and abiotic variables within Eastern Brazilian rocky outcrops?	16:30-17:00
Giovanni Scopece (University of Naples – Federico II - Italy)	The evolution of reproductive isolation in Mediterranean orchids	17:00-17:30

Palms – The ecologically most diverse tropical plant family?

Organizer: Wolf L. Eiserhardt Room: Jacarandá

This symposium will celebrate the diversity of palms, and showcase a range of



cutting-edge studies unpicking various aspects of palm diversity, starting off with new historical insights into the early exploration of palm diversity by the 19th-century botanist Carl Friedrich Philipp von Martius, followed by several talks on the phylogenetic diversification, evolutionary dynamics of and biogeography of the family. The second session will focus on palm ecology and conservation, addressing the drivers behind the variation that has led some to suggest that palms are record-holders also in terms of their ecological diversity.

Speaker	Topic	Time
Fred Stauffer (Botanical Garden of Geneva - Switzerland)	Martius' pioneering work on palm diversity	14:00-14:15
Wolf L. Eiserhardt (Aarhus University - Denmark)	Phylogeny and diversification of Madagascan palms	14:15-14:30
Sidonie Bellot (Royal Botanic Gardens - UK)	Phylogenomics and biogeography of Southeast Asian Areceae	14:30-14:45
Diego Villar-Morales & Laura Calvillo Canadell (Universidad Nacional Autónoma de México)	A revision of Mexican <i>Chamaedorea</i> (Arecaeae)	14:45-15:00
Craig Barrett (West Virginia University - USA)	Phylogenomics of <i>Brahea</i>	15:00-15:15
Oriane Loiseau (University of Zurich – Switzerland)	Macro and micro perspectives on <i>Geonoma</i> evolution	15:15-15:30
Bob Muscarella (Aarhus University – Denmark)	Performance and distribution of Amazonian palms across soil gradients	15:30-15:45
Thaise Emilio (Royal Botanic Gardens, Kew - UK)	Palm hydraulic strategies and climatic ranges	15:45-16:00
Michael Kessler (University of Zurich – Switzerland)	Local to regional ecology of the genus <i>Geonoma</i>	16:30-16:45
Rita Portela (Federal University of Rio de Janeiro – Brazil)	Effects of “primatization” on the population dynamics of a palm that is vulnerable to extinction	16:45-17:00
Caroline Draxler (Natural History Museum Paris - France)	Ecological aspects of animal-palm interactions	17:00-17:15



Vincent Fehr (Aarhus University - Denmark)	Non-native palms as engineers of novel ecosystems in the Anthropocene: a global review	17:15-17:30
Rita Portela (Federal University of Rio de Janeiro – Brazil)	Invitation to the World Palm Symposium 2020 in Rio de Janeiro	17:30-17:35

Wednesday 10 October (8:00-11:30)

Monocot Phylogenomics II – new insights on genome evolution, diversification and biogeography

Organizers: Oscar Alejandro Pérez Escobar, Thomas Givnish, Wolf L. Eiserhardt, William J. Baker Room: Flamboyant

This symposium aims to provide an overview of the recent progress in broad-scale monocot phylogenomic research carried out partly at Kew gardens under the framework of the PAFTOL project (<https://www.kew.org/science/who-we-are-and-what-we-do/strategic-outputs-2020/plant-and-fungal-trees-life>), but also focusing on aspects of biogeography, diversification and character evolution in the clade. More importantly, we aim to identify key research questions concerning monocot evolution that remain unanswered but can now be tackled with new technological and methodological advances.

Speaker	Topic	Time
Wolf Eiserhardt (Aarhus University – Denmark)	The Plant and Fungal Tree of Life project	08:00-08:30
Isabel Larridon (Royal Botanic Gardens, Kew – United Kingdom)	Changing tribal and generic concepts in Cyperaceae	08:30-09:00
Aline C. Martins (Federal University of Paraná – Brazil)	From tree tops to the ground: Reversals to terrestrial habit in <i>Galeandra</i> orchids (Epidendroideae: Catasetinae)	09:00-09:15
Olwen Grace (Royal Botanic Gardens, Kew – United Kingdom)	The Asphodelaceae tree of life: phylogenomic evaluation of systematics in <i>Aloe</i> and related genera	09:15-09:45
Diego Bogarín (Lankester Botanic Garden – Costa Rica)	Anchored hybrid enrichment resolves a species complex derived from recent rapid diversifications	09:45-10:00



Bee F. Gunn (Royal Botanic Gardens Victoria, Australia)	Phylogenomics of Australian (non-Orchidaceae) Asparagales	10:00-10:15
Oscar Alejandro Pérez Escobar (Royal Botanic Gardens, Kew – United Kingdom)	New insights on orchid biogeography and diversification from hundreds of nuclear and plastid gene phylogenies and genomic composition	10:15-10:45
Closure	All participants	10:45-11:00

Advances in the anatomy of the large Poales clade

Organizers: Aline Oriani, Thales D. Leandro and Vera L. Scatena Room: Álamo

This symposium aims to present recent results on floral development and embryology, inflorescence structure, and root and leaf anatomy of different families belonging to the Poales order using a comparative approach.

Speaker	Topic	Time
Sofia Aumond Kuhn (Federal University of Rio Grande do Sul - Brazil)	Floral development and embryology in Bromeliaceae	08:00-08:15
Aline Oriani (São Paulo State University – Brazil)	Floral development and vasculature in Rapateaceae and Mayacaceae	08:15-08:30
Kaire de Oliveira Nardi (São Paulo State University – Brazil)	Evolution of embryological traits in the xyrids	08:30-08:45
Erik Smets (Catholic University of Leuven - Belgium)	The evolution of spikelets and flowers in Cyperoideae (Cyperaceae): a floral developmental approach	08:45-09:00
Peter Linder (University of Zurich - Switzerland)	The phylogenetic and ecological correlates of variation in root anatomy of the African Restionaceae	09:00-09:15
Pascal-Antoine Christin (University of Sheffield – United Kingdom)	Evolutionary precursors, convergent evolution, and the origins of C ₄ leaf anatomy in grasses	09:15-09:30
Thales D. Leandro (São Paulo State University - Brazil)	Fusoid cells in the grass family Poaceae: a developmental approach	09:30-09:45
Closure	All participants	09:45-10:00



Recent advances in the systematics of Bromeliaceae

Organizer: Leonardo M. Versieux Room: Jacarandá

This symposium aims to explore the most recent advances and changes in Bromeliaceae Systematics, from subfamilies to genera levels.

Speaker	Topic	Time
Michael H.J. Barfuss (Univeristy of Vienna – Austria)	Taxonomic revision of Bromeliaceae subfam. Tillandsioideae based on a multi-locus DNA sequence phylogeny and morphology	08:00-08:30
Talita Mota Machado (Federal University of Western Pará – Brazil)	Molecular phylogeny of <i>Vriesea</i> (Tillandsioideae) using NGS	08:30-09:00
Andy Siekkinen (Rancho Santa Ana Botanic Garden - USA)	Recent progress in the systematics of Hechtioideae using NGS	09:00-09:30
Kurt Weising (University of Kassel - Germany)	Recent advances in the Pitcairnioideae systematics	09:30-10:00
Julián Aguirre-Santoro (Universidad Nacional de Colombia - Colombia)	Systematics of the <i>Ronnbergia</i> alliance (Bromelioideae) and new findings on the Northern Andes <i>Puya</i> and <i>Guzmania</i>	10:30-11:00
Georg Zizka (Senckenberg Museum - Germany)	Recent advances in the Bromelioideae Systematics	11:00-11:30

Wednesday 10 October (14:00-17:30)

***Setaria* as a model system for monocot development and biotechnology**

Organizers: Adriana Pinheiro Martinelli and Marcio Alves-Ferreira Room: Álamo

In this symposium, we will focus on the new model plant *Setaria viridis*. *Setaria viridis* belongs to the Poaceae, which is the most economically important monocot family, including sugarcane, sorghum, and maize. Each of the above listed members of the Poaceae undergoes C₄ photosynthesis of carbon capture and fixation. They are also morphologically characterized as having a Kranz anatomy, such that bundle-sheath and mesophyll cells are arranged in concentric



circles around the vascular bundles of the leaves. Due to the significance of C_4 syndrome in biomass production, major efforts are being made to understand the developmental changes that have led to the multiple instances of C_4 photosynthesis over the course of plant evolution. *Setaria viridis* has been proposed as a genetic model for C_4 photosynthesis studies in grasses and several genetic tools have been created to validate its use. This symposium will present a panel of studies on *S. viridis*, from basic research to applied science, to illustrate the benefits of a model plant for C_4 photosynthesis studies.

Speaker	Topic	Time
Marina Martins Soldi (University of São Paulo - Brazil)	<i>Setaria viridis</i> : a C_4 model plant to study the regulation of carbon partitioning and growth	14:00-14:30
Karoline Duarte Stefani (EMBRAPA Agroenergia, Brazil)	<i>Setaria viridis</i> as a model plant for functional genomic studies in C_4 crops	14:30-15:00
Francisco Scaglia Linhares (University of São Paulo - Brazil)	<i>Setaria viridis</i> root onset: a story of many tales	15:00-15:30
Danilo Centeno (Federal University of ABC - Brazil)	Respiratory metabolism on <i>Setaria</i> biomass production	15:30-16:00
Fernanda Reinert (Federal University of Rio de Janeiro - Brazil)	<i>Setaria viridis</i> as a platform for the study of morphophysiological responses to climate change	16:30-17:00
Marcio Alves-Ferreira (Federal University of Rio de Janeiro - Brazil)	Using <i>Setaria</i> as a model system to dissect vascular development in monocots	17:00-17:30

Monocot mats on Gondwanan inselbergs: binding taxonomy, ecology and molecular aspects under a biogeographic view

Organizers: Luiza de Paula and Stefan Porembski Room: Flamboyant

In this symposium, we aim to provide for the first time an overview on monocot-mats occurring on Gondwanan inselbergs, covering topics related to the main ecological strategies, species delimitation, patterns of species diversity, plant evolution and population genetics.



Speaker	Topic	Time
Stefan Porembski (University of Rostock - Germany)	Desiccation-tolerant vascular plants on inselbergs: a global perspective	14:00-14:30
Juliane Rexroth (University of Rostock - Germany)	Microsatellites in <i>Xerophyta</i>	14:30-15:00
Danilo Centeno (Federal University of ABC - Brazil)	Metabolomics of Velloziaceae species and its evolutionary relationship with desiccation tolerance	15:00-15:30
Luiza de Paula (Universität Rostock - Germany)	Community ecology of monocot mats on Brazilian inselbergs and remarks on microsatellites in <i>Vellozia</i> species	15:30-16:00
Diego Giraldo-Cañas (Universidad Nacional de Colombia, Bogotá D.C. - Colombia)	Diversity and endemism of monocots in pre-Cambrian rock outcrops (inselbergs) of the Colombian Amazonia	16:30-17:00
Closure	All participants	17:00-17:30

Linking macro- and microevolution in Bromeliaceae

Organizer: Clarisse Palma da Silva Room: Jacarandá

This symposium aims to present current research linking population genetics to phylogenies.

Speaker	Topic	Time
Clarisse Palma da Silva (State University of Campinas - Brazil)	Linking macro- and microevolution in Bromeliaceae	14:00-14:30
Christian Lexer (University of Vienna – Austria)	Whole-genome and transcriptome signatures of diversification in bromeliads: crossing the micro / macro divide	14:30-15:00
Oriane Loiseau (University of Lausanne – Switzerland)	Biogeographic history and macroevolutionary patterns in the core-Tillandsioideae with a focus on <i>Vriesea</i>	15:00-15:30
Gil Yardeni (University of Vienna – Austria)	Towards understanding the genomic substrate of diversification in <i>Tillandsia</i> subgenus <i>Tillandsia</i>	15:30-16:00



Rachel Jabailay (Colorado College – USA)	Bromeliad life history evolution and conservation implications.	16:30-17:00
Juan Pizon (Autonomous University of Yucatán – Mexico)	Circumscription, diversity, and evolution of <i>Tillandsia</i> subg. <i>Tillandsia</i> based on a multi-locus DNA phylogenetic approach	17:00-17:15
Closure	All participants	17:15-17:30

Thursday 11 October (8:00-11:30)

III Symposium on Neotropical Araceae – Systematics and Evolution

Organizers: Livia Godinho Temponi and Ivanilza Moreira de Andrade Room: Álamo

Neotropical Araceae are a conspicuous and ecologically significant component of the vegetation, particularly of humid forests, where in some regions like the Colombian Chocó they constitute one of the most speciose families of plants. In this symposium, major advance on the systematics of Araceae will be discussed and integrated.

Speaker	Topic	Time
Alejandro Zuluaga (University of Wisconsin - USA)	A new subfamily level phylogeny using nuclear data from Anchored Phylogenomics	08:00-08:30
Monica Carlsen (Missouri Botanical Garden - USA)	Disentangling the Evolutionary History of <i>Anthurium</i> (Araceae) using Genomic Scale Data	08:30-09:00
Lourdes Soares (National Institute of Amazonian Researches - Brazil)	Systematics and conservation of <i>Heteropsis</i> (Araceae) from Amazônia	09:00-09:30
Luana Silva Braucks Calazans (Federal University of Rio de Janeiro - Brazil)	Systematics and conservation of <i>Urospatha</i> (Araceae)	09:30-10:00
Closure	All participants	10:30-11:00



Biogeography, ecology and macroevolution of grasses

Organizers: Maria Vorontsova, Lynn Clark and Elizabeth Kellogg Room: Flamboyant

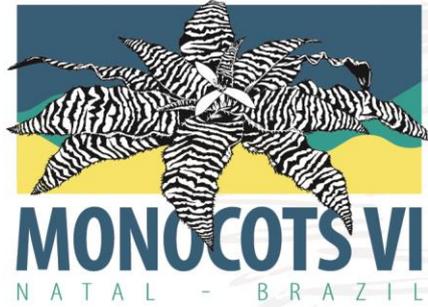
With ca. 12,000 species, the Poaceae is the fifth most diverse family of angiosperms, and the most diverse by far to rely almost exclusively on wind pollination. Grasses occur on all continents, covering 30-40% of the Earth's terrestrial surface, and are arguably the most ecologically successful of angiosperm families. In this symposium, we will focus on the biogeography, ecology and macroevolution of the grass family in order to explore the factors, both biotic and abiotic, and history underpinning this success.

Speaker	Topic	Time
Timothy Gallaher (University of Washington - USA)	Phytoliths, paleoecology and the biogeography of grasses	08:00-08:30
Jill Preston (University of Vermont - USA)	Historical contingency and the origin of tropical-temperate niche transitions in the grass family	08:30-09:00
Maria Vorontsova (Royal Botanic Gardens - England)	Grasses and grasslands of Madagascar	09:00-09:30
Yanis Bouchenak-Khelladi (University of Zurich - Switzerland)	C ₄ grass species assemblages in savannas: a biogeographical approach	09:30-10:00
Peter Linder (University of Zurich - Switzerland)	The Viking Syndrome—why grasses are so successful	10:30-11:00
Closure	All participants	11:00-11:30

Ecophysiology of Bromeliaceae

Organizer: Helenice Mercier Room: Jacarandá

This symposium aims to present current research about Bromeliaceae ecophysiology.



Speaker	Topic	Time*
Ana Zangirlame Gonçalves (University of São Paulo – Brazil)	Ecophysiological strategies in Bromeliaceae: how distinct traits favored their irradiance in a wide range of environments	08:00-08:30
Catarina Nievola (Botanic Institute – Brazil)	Cold tolerance in the tropical bromeliads	08:30-09:00
Céline Leroy (Research Institute for Development - French Guyana)	Effects of drought gradients on the performance of tank bromeliads	09:00-09:30
Helenice Mercier (University of São Paulo - Brazil)	Exploring the physiological and molecular aspects of some functional pathways along the leaves of <i>Guzmania monostachia</i> (Bromeliaceae)	09:30-10:00
<i>Part II: Adaptations and conservation of Bromeliaceae in Brazilian hotspots</i>		
Gecele Matos Paggi (UFMS, Brazil)	Evolution and conservation of bromeliads from hotspots: a case study from the cerrado-pantanal-chaco species	10:30-11:00
Beatriz Neves (UFRJ, Museu Nacional, Brazil)	Drivers of bromeliad trait variation across a latitudinal gradient in the Brazilian Atlantic Forest hotspot	11:00-11:15

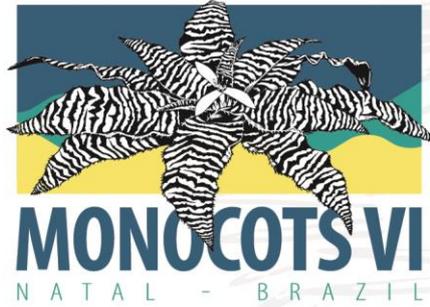
Thursday 11 October (14:00-17:30)

III Symposium on Neotropical Araceae – Floristics, Morphology and Evolution

Organizers: Livia Godinho Temponi and Ivanilza Moreira de Andrade Room: Álamo

Neotropical Araceae are a conspicuous and ecologically significant component of the vegetation, particularly of humid forests, where in some regions like the Colombian Chocó they constitute one of the most speciose families of plants. In this symposium, major advances in the floristics, morphological studies and evolution of Neotropical Araceae will be discussed and integrated.

Speaker	Topic	Time
Ivanilza Moreira de Andrade (Federal University of Piauí - Brazil)	Repatriating Araceae taxonomic data from European collections to Brazil	14:00-14:30



Alessandra Ike Coan, (São Paulo State University - Brazil)	Development and anatomy of reproductive organs of <i>Anthurium</i> (Araceae, Alismatales) and their implications for taxonomy	14:30-15:00
Livia Godinho Temponi (State University of Western Paraná - Brazil)	Araceae from Minas Gerais, Brazil: Flora, endemism and conservation	15:00-15:30
Cassia Mônica Sakuragui (Federal University of Rio de Janeiro - Brazil)	New insights on <i>Philodendron</i> floral evolution	15:30-16:00
Closure	All participants	16:30-17:00

Advances in molecular phylogeny, systematics and evolution of Dioscoreales

Organizer: Juan Viruel Room: Jacarandá

This symposium aims to highlight major and recent developments in Dioscoreales research stemming from various research areas across different continents. At the end we propose some time to discuss further research strategies with the order.

Speaker	Topic	Time
Marybel Soto Gomez (University of British Columbia - Canada)	Towards a reclassification of Dioscoreales using phylogenomics and morphology	14:00-14:30
Sean W. Graham (University of British Columbia - Canada)	Welcome to the dark side: Organellar genome evolution in heterotrophic Dioscoreales	14:30-15:00
Paul Wilkin (Royal Botanic Gardens – United Kingdom)	Yam phylogenetic relationships, conservation and use: what do we know, and what do we need to know?	15:00-15:30
Ricardo Couto (National Museum/Federal University of Rio de Janeiro - Brazil)	Evolution and biogeography of Neotropical <i>Dioscorea</i> and their key morphological traits	15:30-16:00
Lauren Raz (Natural Sciences Institute/ National University of Colombia - Colombia)	<i>Dioscorea</i> as a window into human cultural evolution: from the cognitive revolution to the sexual revolution and beyond	16:30-17:00
Juan Viruel (Royal Botanic Gardens – United Kingdom)	Phylogenomics of <i>Dioscorea</i> : the influence of polyploidy on the evolution of the genus	17:00-17:30

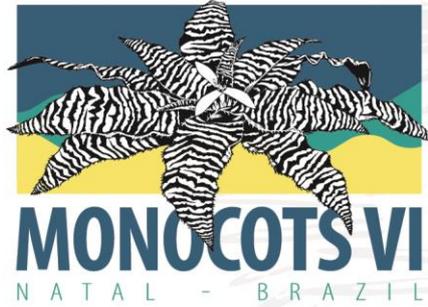


Applied botany: use of comparative data in horticulture, reproductive biology and systematics of Bromeliaceae

Organizer: Leonardo M. Versieux Room: Flamboyant

This symposium aims to explore the different data that have been applied to characterize, to develop, and improve the understanding of different fields, namely the horticulture and systematics of the bromeliads. We will seat together and discuss how different techniques and methods may be used and integrated towards a collaborative and multidisciplinary approach.

Speaker	Topic	Time
Fernanda Vidigal (Brazilian Agricultural Research Corporation - Brazil)	Conservation strategies and new research approaches for the genus <i>Ananas</i>	14:00-14:30
Hilo Souza (Brazilian Agricultural Research Corporation - Brazil)	Bromeliad hybridization: potential and limits for the horticultural trade investigated using microscopy	14:30-14:45
José Alves de Siqueira-Filho (Federal University of Vale do São Francisco)	<i>Cryptanthus</i> as an indicator of conserved areas in the Caatinga	14:45-15:00
Kleber Resende (São Paulo State University - Brazil)	Can vegetative organ anatomy help to disentangle species complexes? The cases of <i>Neoregelia bahiana</i> and <i>Vriesea oligantha</i>	15:00-15:30
Vivian Zambon (State University of Campinas - Brazil)	Pollination ecology of the Bromeliads from the Itatiaia National Park, Brazil: binding nectaries to ecology	15:30-16:00
Sandra Santa Rosa (University of São Paulo - Brazil)	Floral development in <i>Aechmea</i> : understanding floral changes in a large and polyphyletic genus	16:30-17:00
Fernanda Nogueira (Federal University of Rio Grande do Sul, Brazil)	The tank-inflorescence of <i>Nidularium</i> : Architecture, 3D model and the water role	17:00-17:15
Tânia Wendt (Federal University of Rio de Janeiro, Brazil)	Reversibility of breeding systems in bromeliads: history indicates paths to diversification	17:15-17:30



Friday 12 October (8:00-11:30)

Recent advances in Bromelioideae systematics, taxonomy, and evolution

Organizers: Georg Zizka, Elton Leme and Juraj Paule Room: Álamo

Bromelioideae is the second largest subfamily of Bromeliaceae and still the one posing substantial problems, especially as far as delimitation of genera, resolution of phylogenetic trees and the taxonomic value of morphological characters is concerned. The session presents new results in these fields, assessing progress achieved with NGS approaches and presenting new promising morphological characters. Bromelioideae underwent massive radiation in Brazil and might serve as a model system for the colonization of the principal Brazilian biomes (Mata Atlântica, Cerrado, Caatinga) followed by radiations.

Speaker	Topic	Time*
E.M.C. Leme (Research Associate, Marie Selby Botanical Gardens - USA)	Floral morphology still underexploited: the example of the Cryptanthoid complex	08:00-08:30
G.K. Brown (University of Wyoming, Laramie – USA)	Limitation of molecular studies in Bromelioideae taxonomy	08:30-09:00
J. Paule (Senckenberg Research Institute and Goethe University Frankfurt - Germany)	Genome size evolution in Bromelioideae	09:00-09:30
H. Halbritter, E.M.C. Leme, M. Barfuss (University of Vienna – Austria; Marie Selby Botanical Gardens – USA)	Pollen morphology and evolution in Bromelioideae	09:30-10:00
C. Ramirez Diaz (Scientific Research Center of Yucatan - Mexico)	Phylogeny of Central American Bromelioideae (Bromeliaceae)	10:30-10:45
J. Rodrigues Maciel (Recife Botanic Garden – Brazil)	Systematics and evolution of <i>Chevaliera</i>	10:45-11:00
G. Zizka (Senckenberg Research Institute and Goethe University Frankfurt – Germany)	New results from the <i>Ochagavia-Fascicularia</i> group using genome skimming	11:00-11:15
All participants and auditorium	Concluding discussion	11:15-11:30



Monocots in society and tools to spread knowledge about monocots

Organizers: Fernanda Antunes Carvalho and Leonardo M. Versieux Room: Flamboyant

This symposium will treat different aspects of e-taxonomy as well as tools to spread knowledge about monocots, including talks from software developers, editors, and field/education scientists.

Speaker	Topic	Time
Fernanda Antunes Carvalho (Federal University of Rio Grande do Norte - Brazil)	Towards an e-flora of Rio Grande do Norte, Brazil	08:00-08:30
Paul M. Peterson (National Museum of Natural History, Smithsonian Institution – USA)	How to incorporate a worldwide phylogenetic classification in an herbarium using the Poaceae at the United State National Herbarium	08:30-09:00
Bruce K. Kirchoff (University of North Carolina at Greensboro - USA)	Visual Learning: Plant Identification and Beyond	09:00-09:30
Bruce K. Kirchoff (University of North Carolina at Greensboro - USA) and C. Caruso (Editor-in-Chief, Int. J. of Plant Science)	How to get your paper accepted (or rejected) for publication: lessons from two editors	09:30-10:00
Livia Echternacht (Federal University of Ouro Preto – Brazil)	Keys to Interactive Botany: experiences in museums, parks and classes with taxonomic interactive keys	10:30-11:00
All participants and auditorium	Concluding discussion	11:00-11:30



Grass phylogenetics, systematics and evolution: the BOP clade

Organizers: Lynn Clark, Elizabeth Kellogg, R. Patricia de Oliveira and Pedro Viana Room: Jacarandá

In this symposium, we will focus on broad to fine scale phylogenetics, based mainly on plastomes or plastid markers, and the implications of these analyses for classification and evolutionary history in the grass family as a whole and within the BOP clade, one of the two major branches of the grass family. A large number of plastomes for the grass family are now available, and recent analyses largely have confirmed previously inferred relationships but have also allowed for more sophisticated analyses of potential bias, which are presented here. The BOP clade, consisting of the Bambusoideae, Oryzoideae and Pooideae, represents one of two major branches of the grass family, and includes over 5,500 species. Recent advances in understanding the systematics and evolution of the Bambusoideae (1,670+ species) and Pooideae (ca. 3,800 species) based on the phylogenetic analysis of plastid markers are presented.

Speaker	Topic	Time
Melvin Duvall (Northern Illinois University - USA)	A 250-plastome phylogeny of the grass family	08:00-08:30
Paul Peterson (Smithsonian Institution - USA)	A phylogeny and classification of the Poeae chloroplast group 1 (Pooideae: Poeae: Agrostidinae, Aveninae, Calothecinae, Echinopogoninae)	08:30-09:00
Liliana Giussani (Darwinion Institute - Argentina)	Evolutionary systematics in dune species of <i>Poa</i> (Poaceae: Pooideae)	09:00-09:30
Pengfei Ma (Kunming Institute of Botany - China)	Taxonomy, phylogeny and biogeography of the temperate woody bamboos (Bambusoideae: Arundinarieae)	09:30-10:00
Lynn Clark (Iowa State University - USA.)	Systematics and evolution of the Neotropical woody bamboos (Bambusoideae: Bambuseae)	10:30-11:00
R. Patricia de Oliveira (State University of Feira de Santana - Brazil)	Systematics and evolution of the herbaceous bamboos (Bambusoideae: Olyreae)	11:00-11:30



Friday 12 October (14:00-17:30)

Evolution and Diversification in Cyperaceae Organizer: Wayt Thomas Room: Álamo

Recent developments in Cyperaceae research will be communicated, including tribal and generic concepts, polyploidy and holocentric chromosome evolution, and evolution and pollination ecology in the genus *Rhynchospora*.

Speaker	Topic	Time
Isabel Larridon (Royal Botanic Gardens, Kew, UK)	Changing generic concepts in Cyperaceae: focus on <i>Costularia</i> s.l	14:00-14:30
Suzana Costa (University of Campinas – Brazil)	What about Cryptangieae (Cyperaceae)? Clarifying a Neotropical Gap in Sedges	14:30-14:45
Tammy Elliott (McGill University – Canada)	Unravelling Evolutionary Relationships in a Complex Polyploid Clade---the southern African <i>Schoenus</i> (Cyperaceae)	14:45-15:15
Pedro Jimenez-Mejias (Smithsonian Institution – USA)	A playground for <i>Carex</i> : resolving its backbone and fine-scale relationships using HybSeq	15:15-15:30
José Ignacio Márquez-Corro (Pablo de Olavide University – Spain)	Holocentric Chromosome Evolution and its Impact in Diversification, with Special Emphasis on Sedges (Cyperaceae)	15:30-15:45
Andrea Pedrosa-Harand (University of Pernambuco – Brazil)	Evolution and Structure of Holocentric Chromosomes in Cyperids: The Case of <i>Rhynchospora</i> (Cyperaceae)	15:45-16:00
William Wayt Thomas (New York Botanical Garden – USA)	Major Clades and Morphological Trends in <i>Rhynchospora</i> (Cyperaceae)	16:30-16:45
Pedro Joel S. Silva Filho (Federal University of Rio Grande do Sul – Brazil)	Phylogeny and Diversity in <i>Rhynchospora</i> section <i>Tenues</i>	16:45-17:00
Ana Carolina Costa (University of Pernambuco – Brazil)	Wind to Insect Pollination in <i>Rhynchospora</i> (Cyperaceae)	17:00-17:30



Grass systematics, evolution and development: the PACMAD clade Room: Jacarandá

Organizers: Elizabeth Kellogg, Lynn Clark, R. Patricia de Oliveira and Pedro Viana

The approximately 6,000 species collectively classified in the Panicoideae, Aristidoideae, Chloridoideae, Micrairoideae, Arundinoideae and Danthonioideae form the PACMAD clade, which along with the BOP clade (5,500+ species) is one of the two major branches of the grass family. A number of important crops such as maize, sorghum, sugarcane, the millets and tef, as well as other economically important plants (e.g., switchgrass and miscanthus for biofuels) are found in this clade. All 24+ independent origins of the C₄ photosynthetic pathway in grasses occurred within the PACMAD clade, and PACMAD grasses are important components of both tropical and temperate grasslands. In this symposium, we will focus mainly on the Panicoideae, the most diverse subfamily within the PACMAD clade. Aspects of generic classification, nuclear markers and genomics, and grass floral development involving members of this subfamily will be addressed. An opportunity for general discussion of the topics included in this symposium as well as the other grass symposia will be provided in the final portion of this symposium.

Speaker	Topic	Time
Fernando Zuloaga (Darwinion Institute – Argentina)	Generic realignments in Paniceae and Paspaleae (Panicoideae)	14:00-14:30
Christian da Silva (State University of Feira de Santana -Brazil)	Diversity and evolution of rachilla appendages in the core panicoids (Panicoideae)	14:30-15:00
Anthony Studer (University of Illinois - USA)	Genomics of <i>Steinchisma</i> (Panicoideae: Paspaleae)	15:00-15:30
Cassiano Welker (University Federal of Uberlândia - Brazil)	The use of low-copy nuclear genes in the delimitation of genera and species in the Andropogoneae (Panicoideae)	15:30-16:00
Renata Reinheimer (CONICET, Argentina)	Grass inflorescence evolution	16:30-17:00
Madelaine Bartlett (University of Massachusetts Amherst - USA)	Evolution of transcription factor protein-protein interactions and flower development in grasses	17:00-17:30