

# Plants and heritage



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### Special points of interest:

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- A visit to Colca Canyon
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- A national park of historical value

The 57th Annual meeting of the Society for Economic Botany will be held in Pine Mountain, Kentucky June 5th—9th, 2016. Participants can expect a vibrant meeting with many varied activities set in a serene natural environment.

The theme of the meeting is 'Resilience in the Face of Resource Extraction: Ethnobotany and Exploitation'. In addition to presentations on research conducted in related fields there will be workshops, field trips and immersion in the Pine Mountain culture. Knowledge sharing and networking is always a valuable experience at the SEB meetings.

Some of the exciting workshops to be conducted include, 'Implementing problem-based learning in the classroom through interactive case studies', 'Student Involvement in the Society', 'The Science of Ethnobotany', 'Taste, smell, touch & sound for

plant identification', 'Laboratory or Investigator Websites' and 'Weaving Together Ethnobotany'.

The venue for the meeting is the Pine Mountain Settlement School which was founded in 1913. The program currently offered at the school includes Environmental Education, Appalachian cultural studies and Heritage crafts. The campus is located on 625 acres, to the North of Pine Mountain, and provides habitat for a diverse plant population, with some species exclusive to the site.

Come join us and share in science, plants, the culture and fun of an exciting destination. Registration is open at the link below. Accommodation is available on campus at an affordable rate but you must make your bookings early. SEB 2016, add it your calendar of events.

<https://www.eiseverywhere.com/ereg/index.php?eventid=159492&>

# *Ethnobotany vs Economic Botany*

## *A Caribbean Perspective—S. Peter*



### ***Mission***

*To promote the conservation of heritage knowledge and tradition related to the use of Caribbean plants and to encourage research for heritage validation, conservation through education and sustainable utilization of the natural resources.*

**'The Caribbean perspective must mirror a global perspective on this issue'**

The Caribbean Chapter of the Society for Economic Botany was officially launched at the 59th Meeting of the SEB in Xalapa, Mexico. The mandate given to the new arm of the SEB was viewed as challenging considering the age and successes of the main society which was established in 1959. The growth of the Caribbean chapter has been modest but interest is growing with the outreach to social media.

A common point of clarification requested by potential members is the meaning of 'Economic Botany'. In some cases it is felt that the focus of the society is more linked to industry than science. Those of us within the society understand the nexus of science, culture, anthropology and industry that is the ethos of the society. Is the name of our society misleading or exact?

In seeking to answer this question I decided to seek guidance from the life and legacy of one of the founders of the society, the stalwart Richard Evans Schultes. The publication 'Medicinal plants and the legacy of Richard E- Schultes' edited by Ponman and Bussman provided valuable perspectives. In his contribution Michael Balick, one of Schultes devoted graduates, reflected on his legacy, the society and the direction of ethnobotanical research. In this literary evaluation the philosophy of Schultes jumps from the pages glowingly crafted by the author. On reading, it becomes evident that the legacy of Schultes, and also his mentor Oakes Ames, is the wealth of knowledge and perspective on the relationship between plants and people that they have shared through their body of work, academic leadership, publications and cadre of mentees.

The internet is a vast resource worth tapping into and in my search for words of clarity from Schultes I came across an interview conducted in 1990 when he was apparently inducted into the Academy of Achievement. The extensive interview probed Schultes for insight into his career, his field exploits and

his position on the value of indigenous peoples and their plant knowledge. This article referred to him as 'The Father of Ethnobotany' and made buoyant his passion for plants and people intertwined with respect for the traditional knowledge that could drive scientific discovery of new medicines.

My literary field trip unearthed the fact that a popular course on economic botany, taught by Schultes, once carried the course title of 'Plants and Human Affairs'. In 'Ethnobotany and Economic Botany: Subjects in search of definitions', B. C. Bennett examines the discourse through the vision of stakeholders including Harshberger, Schultes and Balick, spanning voices over centuries. In making reference to the contribution by Claude Earl Smith, a former assistant to Schultes in Amazon collections and also President of the SEB 1979-80, he notes that Smith felt that economic botany was ethnobotany with a financial incentive. Other proponents in the field opined that the two terms economic botany and ethnobotany could be used synonymously.

The Caribbean perspective must mirror a global perspective on this issue. It is clear that in both the scientific and cultural domains, the study of economic botany must embrace ethnobotany. The Society for Economic Botany is a model society in its mission which clearly states *'To foster and encourage scientific research, education, and related activities on the past, present, and future uses of plants, and the relationship between plants and people, and to make the results of such research available to the scientific community and the general public through meetings and publications.'* The inclusion of economic botany in the name of the society was obviously an effusion emanating from the period of excitement surrounding discovery of pharmaceutical entities. Our appreciation of the people, their knowledge and the scientific rigour required for the discipline make us leaders in the science of all applications of ethnobotany. We are a society about science, plants and people and maybe our name should be more reflective of this.



# Youth Outreach

Members of the SEB Caribbean Chapter participate in activities to knowledge share. This is of major importance and value when linked to youth outreach as heritage knowledge and traditions are being gradually eroded as we become disconnected from our past and history.

One recent outreach activity involved tours with girl guide units in Barbados where participants earned badges related to exploration of indigenous plants and the associated ethnobotany. Tours were conducted through a manicured forested area, a virgin forested area and an eco-farm

with a medicinal mandala.

The tours departed from the Girl Guides Headquarters and the thirty-six participants from both guides and brownie groups, as well as their supervisors, were armed with their field guides and field equipment in anticipation of having an intimate excursion with nature. The President of the Caribbean chapter shared knowledge on the identification of plants, the value of ecosystems and local plant uses. The budding ethnobotanists expressed their excitement with many questions and discussions on career paths.

The programme was the initiative of the President of

Soroptomists International of Jamestown, Michelle Cave and The Girl Guides Association of Barbados. The tours fell under the two programmes areas of the Soroptomists, Environmental Sustainability and Health and Wellness.

This philosophy is shared with the Girl Guides Association who aim to foster a love of country, love of nature and protection of the environment within their youth groups. Areas visited included The Flower Forest Botanical Gardens, The Queens Park and Turners Hall Woods.



**'We are partnering with our National Centre for Science and Technology to entice the girls into scientific careers.'**

**Michelle Cave, President SI Jamestown, Barbados.**

*Top right: Shaded by the centuries old Baobab in Queens Park*

*Bottom left: Making observations.*

*Bottom right: Soroptomist Monica Hendricks accompanying the guides through The Flower Forest Botanical Gardens.*



## *Success and Reward in Ethnobotany and Economic Botany Research*

### *A Profile of Dr Sylvia Mitchell*



*Dr Sylvia Mitchell and spouse.*



Dr. Sylvia Mitchell, Lecturer, is Head of the Medicinal Plant Research Group at the Biotechnology Centre of the University of the West Indies, Mona Campus, Jamaica. Dr Mitchell formed this research group in 1989 and the centre was opened in 1999. She is trained in various aspects of technology commercialization and has over twenty-eight years experience with tissue culture including seven years at the Scientific Research Council.

Dr. Mitchell supervises undergraduates, postgraduates, and post-doctoral research which includes tissue culture, anti-microbial and molecular aspects of research. Her own research includes development of micro-propagation protocols and soil ameliorants such as biochar, with relevance to the establishment of sustainable business using locally grown plants of Jamaica. She has over 233 publications in refereed journals, newspaper editions and magazines, including technical reports, monographs and also an e-book. She believes the Caribbean has real potential to realize sustainable utilization of its native plant biodiversity for food, herbs, spices, medicine, aromatherapy, furniture, and bio-fuels through the judicious use of biotechnology, a goal towards which she is diligently working.

She is presently a board member of the Bureau of Standards Jamaica, an Education Officer for the Society for *In Vitro* Biology, and an Editor for the Third World Academy of Science Medicinal Plant Network. Her passion and commitment to biotechnology as a tool to enhance economic botany was recognised in 2015 when she was honoured with the Principal's Research Award for the Best Research Publication in the Faculty of Science and Technology for the 2014/2015 academic year. The paper was published in the Journal of Ethnopharmacology in April 2015 and shared the results of the TRAMIL ethnomedicinal survey done in Jamaica.

Traditional Medicines in the Islands network (TRAMIL) is an applied research programme that scientifically evaluates and

documents the safety and efficacy of medicinal plant remedies used for primary healthcare in the Caribbean ([www.tramil.net](http://www.tramil.net)). A key aspect of the TRAMIL program is the documentation and conservation of traditional knowledge and biodiversity, using ethnomedicinal surveys. The results of the survey are being followed by ongoing scientific validation and toxicity studies, and plans are in place for the next TRAMIL regional workshop and outreach activities (TRADIF) to take place in Jamaica in 2016. In addition, the results of the survey, together with previous results focusing on the concomitant use of medicinal plants with pharmaceutical drugs, are being communicated to local doctors, pharmacists and other health care professionals. The award was presented at the Annual Research Awards Ceremony on February 19th, 2016.

Dr Mitchell was also recognised in 2015 by the Society for In Vitro Biology with the Distinguished Service Award. The long service award was added to her list of achievements, by the University of the West Indies, for over fifteen years of academic leadership. The Caribbean Chapter of the SEB offers congratulations to Dr Mitchell and acknowledges her significant contribution to the study of Ethnobotany and the promotion of innovation in Economic Botany in the Caribbean.

**'The Caribbean has real potential to realize sustainable utilization of its native plant biodiversity for food, herbs, spices, medicine, aromatherapy, furniture, and biofuels.'**



## *Earth Mother Botanicals Ltd—A Friend of the Society*



Earth Mother Botanicals Limited was launched in 2000 as a 100 % natural skin care product line. The company embodies the principles of the 'Green revolution' and employs sustainable methods throughout their manufacturing process. Organically grown herbs, fruits and flowers, combined with high quality oils and natural food grade ingredients form the basis for their formulations. Low temperature processing is also a strategy used to retain the integrity of the plant material used.

The owners, Sandra Weekes and Amy Lemay, adopted sustainable methods of processing to lower the footprint of the business. Special consideration has also been given to packaging with the development of recycled paper, use of local fibres, woods and pottery.

Well documented standards are followed for all formulations to guarantee consumers a product of quality and consistency. A number of plants indigenous to the Caribbean are employed in their natural products. The plants are used

to infuse base oils and other base media.

Some of the plants used include Cure-for-all (*Pluchea carolinensis*), Aloe (*Aloe vera*), Cerasee vine (*Momordica charantia*), Wonder-of-the-world (*Kalanchoe pinnata*) and Broad-leaved-thyme (*Plectranthus amboinicus*).

Earth Mother Botanicals Ltd is Friend and Member of the SEB—Caribbean Chapter. See the link. <https://www.facebook.com/Earth-Mother-Botanicals-Ltd-35027095/?fref=ts>



## *Inaugural Food Law and Industry Conference 2015*



*S. Sealy presenting on 'Time for a paradigm shift'.*

*The Food Law and Industry Conference 2016 will be held in Barbados August 09*

On August 11th 2015, Genesis Law Chambers hosted the Inaugural Barbados Food Law and Industry Conference at the Divi Southwinds Hotel and Resort, St. Lawrence, Christ Church, Barbados, W.I under the theme: " Harmonizing Food, Law and Science". The Society for Economic Botany—Caribbean Chapter was represented by Dr Sonia Peter.

Key note speakers, exhibitors and attendees from industry, academia, law and standards organizations gathered to examine the challenges facing the food industry. The featured keynote speakers of the inaugural Barbados Food Law and Industry Conference 2015 were Heather Farrell-Clarke (Quality Assurance Specialist), Dr. Cheryl Rock (Food Scientist

and Professor at the California State University), Ryle Rock (Senior Environmental Officer of the Ministry of Health), Dr. Eddy Ventose (Professor of Law at the University of the West Indies, Cave Hill Campus and Attorney-at-law) Nadine Benn-Greaves (Certified Food Scientist) and Susan L. Sealy (Attorney-at-law and lecturer at the University of Southern Caribbean Barbados in paralegal studies).

An interesting component of the conference was a product development competition in which participants were guided through the process of 'idea to standardized product' and then presented their innovation during the afternoon session. One exciting new product was a plant based substitute for cheese spread which was eventually awarded the top

prize.

Contestants were judged for the application of standards in formulation, processing, packaging and scientific method including reporting. The conference is the brainchild of twin sisters Dr Cheryl Rock and Susan Sealy. These young women are committed to harnessing their knowledge sets to enhance food manufacturing standards and provide exposure to the ramifications of applied laws. Planning for the 2016 conference is at an advanced stage and international students are expected to be in attendance and to participate in workshop activities and tours.

All are welcomed to attend and experience Barbados in the process. See the link for further information. <http://www.genesislawchambers.com>



Left: Dr Peter viewing the winning product formulated by Esther Selman. Food Scientist, Dr C. Rock (l) and Food Law Attorney S. Sealy (r) with the prize winners.



## *An Experience in Peru—Colca Canyon*

Peter Fields, a young ICT professional residing in England, shares with members his experience while visiting Colca Canyon in Peru.

Q—Peter, what motivated you to make this exciting journey?

A—I have forged many friendships since making England my home away from the Caribbean. I shared many conversations with a colleague who was likewise temporarily shifted from his home base in Peru and decided to become immersed in the culture and tradition he so passionately described.

Q—What impressed you about the traditional knowledge of the Peruvians?

A—I was amazed at the extent to which traditional knowledge is a cornerstone for sustainable living. Traditions reaffirming their connection with the environment have spanned time and are still relevant today. I found that *Pachamama*, loosely translated as Mother Earth, features prominently in the

national narrative and is a vital system of belief for the people. They appreciate the interconnectivity of all elements of nature and embody a practice that respects the land and all that it provides. It was interesting to hear that they consider the water sourced from the mountain to be more valuable for agriculture than water sourced from a river. I believe that there are both practical and spiritual components to this nugget of traditional knowledge. I also saw as important to the people, the blend of both modern and traditional systems in their way of life.

Q—What is your main take away from your travel to Peru?

A—I have realized that traditional knowledge is a critical part of sustainable living but its value is being minimized. I now firmly believe that we should adapt to nature instead of trying to make nature adapt to us. Peter is a friend of the SEB—Caribbean Chapter.

*Ricinus communis*—  
Castor bean  
Used for  
antibacterial  
properties  
in Peru

*Picture credit*  
P. Fields



*Above*—Peter Fields enjoying a day in the field. *Below left*—Colca Canyon.



**"I now firmly believe  
that we should adapt  
to nature instead of  
trying to make  
nature adapt to us"**

## *Plectranthus amboinicus*—A Phytochemical Study



Broad-leaved-thyme—*Plectranthus amboinicus* (Loureiro) Sprengle

'Broad-leaved-thyme is also known as Poor-man's-pork in Barbados'

The Caribbean archipelago shares a vibrant history in the use of plants for phytomedicines. Members of the Lamiaceae family are found in all pharmacopoeia with a myriad of applications for the fragrant rich leaves. *Plectranthus amboinicus*, commonly referred to as Broad-leaved-thyme in Barbados, Big thyme in Grenada, Oregano brujo in Puerto Rico and also Cuban oregano is used as a culinary herb but also for the treatment of hypertension, colds and flu. Synonyms include *Coleus aromaticus* and *Coleus amboinicus*.

The plant is now found in herbal gardens but can readily escape growing abundantly with adequate sunlight and water. The textured leaves are very aromatic, readily releasing the essence when crushed. Laboratory tests have shown the leaves to be a source of polyphenols and many flavonoids have been isolated on

phytochemical analysis employing chromatographic methods and structure elucidation by mass spectrometry or NMR. The classification into the genus *Coleus* is now considered to be not valid and identification of flavonoids in the leaves was found to be useful in establishing chemotaxonomical features.

*Plectranthus* and *coleus* are considered to be separate clades. 6-hydroxylated flavones appear chemotaxonomical for *plectranthus* while methoxylation at positions 6 and 7 of the flavonoid ring system is common to both *coleus* and *plectranthus*. Cirsimaritin and salvigenin are examples of the methoxylated flavones.

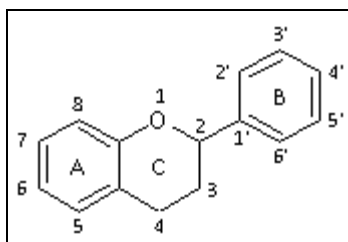
A study of a sample *P. amboinicus* grown in the Caribbean (Barbados) supported these structural features of flavonoids from the genus. Cirsimaritin and ladanein were iso-

lated from leaf extracts and also derivatives of salvigenin.

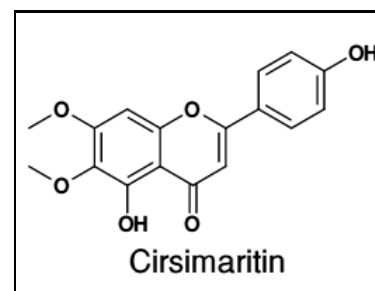
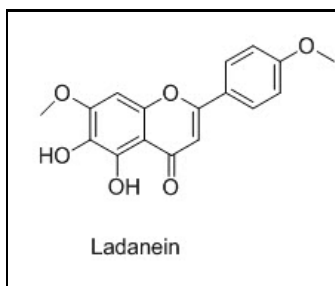
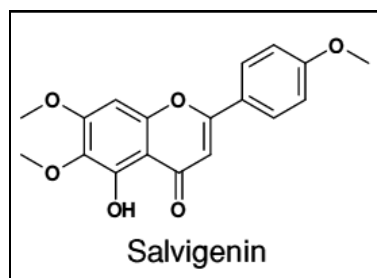
The application of HPLC ESI MS MS proved effective at providing data for the structure elucidation of the flavonoids. The data also supported the presence of a number of flavonoid glycosides. Further analysis of extracts from the species and genus will indicate if these glycosides are chemotaxonomical. Similar glycosides have been isolated from other Lamiaceae species.

The phytochemical analysis of Barbadian *P. amboinicus* was carried out by S Peter et al. The link to the paper is given below.

<http://www.tandfonline.com/doi/full/10.1080/03601234.2015.1058103>



Basic flavonoid skeleton





## *Images from the Field—Betsabe Castro, Graduate Student*

Betsabe Castro represents the future of the SEB and also the Caribbean Chapter. She is currently a member of the SEB student committee. Betsabe is a first year graduate student with Paul Fine and Thomas Carlson in the Department of Integrative Biology at the University of California, Berkeley. Her general research interests lie in the intersection of the fields of tropical ecology and ethnobotany. Of special interest is the impact of human activity on the evolutionary responses of culturally significant plants.

Her current research focus is the comparison of the phenotypic variation and plasticity of ethnobotanical plants in different islands of the Caribbean Basin. Betsabe is also interested in establishing research sites in Northern California and the Amazon.

**'Betsabe Castro represents the future of the SEB and also the Caribbean Chapter.'**



*Top right: Field work in Chile*

*Bottom left: Working in a field of sunflowers in Colorado*

*Bottom right: Exploring Puerto Rican ethnobotany*



## Society for Economic Botany— Caribbean Chapter

Dr. S Peter

Department of Chemistry

Division of Natural Sciences

Barbados Community College

St. Michael, Barbados

Phone: 246-841-4254

Fax: 246-438-4178

E-mail: seb.caribchap2010@gmail.com

### *About the Caribbean Chapter*

*Formation of the Caribbean chapter of the Society for Economic Botany was conceptualized at the 50th annual meeting in Charleston, South Carolina, 2009. The theme of the conference was African Ethnobotany in the Americas and the wealth of activity presented on research being conducted in the Americas and the African diaspora reflected a need for an ethnobotanical base in the Caribbean region. The Caribbean chapter will function to collate research centered on the use of plants by peoples of the region. Knowledge sharing and exchange will be one of the great benefits as well as direct links to the international society and other chapters.*

## We're on Facebook!

<https://www.facebook.com/groups/199610436721073/>



## *Farley Hill National Park*

*Farley Hill house was built in 1818. It was regarded as the most impressive mansion in Barbados. In the mid-nineteenth century the property was owned by Sir Graham Briggs, a British planter and legislator. Briggs imported many new trees into the island.*

*In 1957, the house was used in the film **Island in the Sun** but was destroyed by fire in 1965. Farley Hill was officially opened as a national park in 1966.*

