



Organisers



*International Symposium
FloraMac2010*

Funding



*23-25 September 2010
Ponta Delgada, Azores, Portugal*



International Symposium

FloraMac2010

23-25 September 2010

Ponta Delgada, Azores, Portugal



Organisers

CCPA Centro de Conservação e Protecção do Ambiente
CIBIO Centro de Investigação em Biodiversidade e Recursos Genéticos, Pólo Açores

Organizing Committee

Universidade dos Açores

Luís Silva • Mónica Moura • Graciete Maciel • Ana Isabel Neto • Rosalina Gabriel

Universidade da Madeira

Miguel Sequeira

Jardin Botánico Canario “Viera y Clavijo” – Unidad Asociada CSIC

Juli Caujapé Castells

Instituto Nacional de Investigação e Desenvolvimento Agrário

Isildo Gomes • Samuel Gomes

Natural History Museum

Mark Carine • Fred Rumsey

Harvard University, Department of Organismic and Evolutionary Biology

Hanno Schäfer

Instituto de Investigação Científica Tropical

Maria Romeiras

Keynote speakers

David Bramwell

José Luis Martín Esquível

José María Fernández-Palacios

Juli Caujapé Castells

Ricardo Haroun

Robert J Whittaker

CONTENTS

SYMPOSIUM PRESENTATION	9
GENERAL PROGRAM	11
PROGRAM	13
PHYLOGENETICS & BIOGEOGRAPHY	13
ECOLOGY & CONSERVATION	17
ETHNOBOTANY & PLANT RESOURCES	21
ABSTRACTS	23
PHYLOGENETICS & BIOGEOGRAPHY	25
ORAL PRESENTATIONS	25
POSTER PRESENTATIONS	37
ECOLOGY & CONSERVATION	49
ORAL PRESENTATIONS	49
POSTER PRESENTATIONS	61
ETHNOBOTANY & PLANT RESOURCES	77
ORAL PRESENTATIONS	77
POSTER PRESENTATIONS	81
INDEX OF AUTHORS	89



General Program

23-09-2010

Phylogenetics & Biogeography

08:30 Registration	14:00 Session conference
09:30 Opening session	14:30 Oral presentations
10:00 Session conference	15:30 Poster Session / Coffee break
10:30 Coffee break	16:00 Oral presentations
11:00 Oral presentations	18:30 End of the day
13:00 Lunch	19:00 Reception of participants

24-09-2010

Ecology & Conservation

09:00 Session conference	14:00 Session conference
09:30 Oral presentations	14:30 Oral presentations
10:30 Coffee break	15:30 Poster Session/Coffee break
11:00 Oral presentations	16:00 Oral presentations
13:00 Lunch	18:00 End of the day
	20:00 Symposium dinner

25-09-2010

Ethnobotany & Plant Resources

09:00 Session conference	14:30 Workshops
09:30 Oral presentations	- DEMIURGO project meeting
10:30 Poster Session/Coffee break	- BIOCLIMAC project meeting
11:00 Session conference	- Macaronesian Herbaria
11:30 Conclusions of the symposium	- Conservation of Bryophytes in Macaronesia
12:00 Closing session	- Edition of a Flora of Macaronesia
12:45 Lunch	15:30 Coffee break

26-09-2010

Post-symposium Tour

- 08:30 Arrival of participants
- 09:00 Departure from the University Campus
- 09:30 Indigenous and non-indigenous species in the south coast
- 10:30 Lagoa do Fogo Nature Reserve – Indigenous and non-indigenous species
- 11:30 Porto Formoso tea plantations
- 12:30 Terra Nostra Gardens and swimming pool – Indigenous and non-indigenous species
- 13:30 Traditional Furnas Lunch
- 15:00 Visit to hotsprings
- 15:30 Lagoa das Furnas – Indigenous and non-indigenous species
- 17:00 Departure to Ponta Delgada

Rosalina Gabriel, moderator

09:00 Session conference

Global warming threaten the biodiversity in Canary Islands

Martín Esquivel JL

09:30 Oral presentations

The nineteenth century and the botanical exploration of Madeira

Gomes da Conceição AH & Menezes de Sequeira M

Noxious invader or biomass resource? The case of *Pittosporum undulatum* in the Azores islands

Lourenço P, Medeiros V, Gil A & Silva L

Outdoor growth of *Haematococcus pluvialis* for astaxanthin production in the Azores

Xavier ED, Furnas J, Azevedo JM, Mota G, Teves L & Neto AI

10:30 Poster Session / Coffee break

57. Plant diversity in the city of La Laguna (Tenerife)

García-Gallo A, Pérez-Vargas I & Wildpret W

58. Essential oil chemical variability of *Myrtus communis* L collected in the mainland Portugal and Santa Maria (Azores)

Lima AS, Bahcevandziev K, Barroso JG, Pedro LG & Figueiredo AC

59. Triterpenes from the latex of *Euphorbia azorica*

Lima E & Medeiros J

60. Triterpenoids from *Euphorbia stygiana*

Lima E & Medeiros J

61. *Hypericum foliosum* Aiton. An Azorean endemic plant with anti-acetylcholinesterase properties

Rainha N, Arruda M, Teixeira T, Rosa JS, Barreto M, Lima E & Baptista J

62. Inhibition of acetylcholinesterase by *Hedychium gardnerianum* essential oils from S. Miguel (Azores)

Arruda M, Rainha N, Medeiros J, Viana H, Rosa JS & Barreto MC

63. Polyphenols and antioxidant activity in macroalgae from Azores

Anjos MC, Medeiros J, Neto AI & Barreto MC

64. Screening for acetylcholinesterase inhibitors in Azores Macroalgae

Medeiros J Arruda M, Anjos MC & Barreto MC

65. Cytotoxicity of *Hedychium gardnerianum* extracts against HeLa tumour cell line

Nunes R & Barreto MC

66. Search for biological activities in plants from Macaronesia against *Pseudaletia unipuncta* (Lepidoptera: Noctuidae)

Teixeira T, Rosa JS, Mascarenhas C, Oliveira L, Barreto MC & Medeiros J

67. Search for insecticidal activity of *Hypericum undulatum* Schousb. Ex Willd. and *Hypericum foliosum* Aiton against *Aphis fabae* and *Myzus persicae* (Homoptera: Aphididae)

Saraiva J, Teixeira T, Rainha N, Mendes R, Baptista J, Lima E, Garcia P, Soares AO & Rosa JS

68. Ethnobotanical study of the Fajã da Ovelha (Madeira, Portugal)

Ramos L, Frazão-Moreira A & Menezes de Sequeira M

Noxious invader or biomass resource? The case of *Pittosporum undulatum* in the Azores islands

Lourenço¹ P, Medeiros² V, Gil¹ A & Silva¹ L

¹ CIBIO-Açores, Department of Biology, University of the Azores, 9501-801 Ponta Delgada, Portugal

² Direção Regional dos Recursos Florestais dos Açores, Rua do Contador, 23, 9500-050 Ponta Delgada
(plourenco@uac.pt; vasco.am.medeiros@azores.gov.pt; arturfreiregil@yahoo.com.br; lsilva@uac.pt)

Pittosporum undulatum Ventenat (Pittosporaceae) is a tree or shrub native to Australia introduced in the Azores in the 19th century, presently naturalized in the nine islands. According to a random survey of vascular plants in the Azores, the invader is present throughout the archipelago, in 62% of 547 1 km² samples. It was found in mixed stands (32%), forming groups and also as isolated trees. There was a clear preference for native scrub (39%), mixed woodland (17%) and hedgerows (23%). The altitudinal range extended from sea level up to about 800 m a.s.l., with the highest frequency at around 300 m. The woody species strongly associated with *P. undulatum* included non-indigenous as well as native plants. Based on a forestry inventory, 49 % of the forested area in the Azores Islands, about 24000 hectares, are occupied by *P. undulatum*. The estimated annual *P. undulatum* biomass production in the Azores might range from only about 150 tons in the small island of Corvo up to more than 60000 tons in Pico Island. Since there are no resources available to control this large-scale invasion, using *P. undulatum* biomass for energy production might be an important factor to stimulate the progressive cutting of its stands and replacement by native species.

Keywords: *Pittosporum undulatum*, plant invader, biomass.

Outdoor growth of *Haematococcus pluvialis* for astaxanthin production in the Azores

Xavier^{*1,2,3} ED, Furnas³ J, Azevedo^{1,2} JM, Mota³ G, Teves³ L & Neto^{1,2,4} AI

¹ Department of Biology, University of the Azores, 9501-801 Ponta Delgada, Açores, Portugal

² CIRN (Centro de Investigação de Recursos Naturais), University of the Azores, 9501-801 Ponta Delgada, Portugal.

³ Algicel, Biotecnologia e Investigação, LDA. 9501 Ponta Delgada Açores.

⁴ CIIMAR (Centro Interdisciplinar de Investigação Marinha e Ambiental), Rua dos Bragas 289, 4050-123, Porto, Portugal. (emanuelxavier@uac.pt; furnax_jcsf@hotmail.com; josemnazevedo@uac.pt; goncalomota@ftm.pt; teves.luis@ftm.pt; aneto@uac.pt)

An integrated approach of astaxanthin production from the microalgae *Haematococcus pluvialis* was tested to determine its industrial feasibility using vertical and horizontal photobioreactors placed outdoors in Azores, Portugal (temperate maritime weather) from December 2009 to February 2010. The culture media utilized was made from common fertilizers and proved to be very effective. Various parameters as pH, dissolved oxygen, temperature and fluorescence were measured daily to assess the state of the culture. Biomass and astaxanthin concentration were calculated regularly. Biomass and astaxanthin productivity observed in this trial were substantially higher when compared to other studies done in similar conditions, suggesting that the methodology applied in the present study is effective and an interesting solution for industrial production of astaxanthin.

Keywords: *Haematococcus pluvialis*, astaxanthin photobioreactors.

OUTDOOR GROWTH OF *HAEMOTOCOCCUS PLUVIALIS* FOR ASTAXANTHIN PRODUCTION IN THE AZORES

Xavier, ED; Furnas, J; Azevedo, JM; Teves, L; Mota, G & Neto, AI

