



Biodiversity and Plant Evolution

Organized by: Centre for Ecology, Evolution and Environmental Changes and Museu Nacional de História Natural e da Ciência –MUHNAC (<http://www.mnhn.ul.pt/>)

Teachers: Helena Cotrim and Manuela Sim-Sim (coordinators), Adelaide Clemente, Ana Isabel Correia, Cecília Sérgio, César Garcia, Joana Magos Brehm and Maria Amélia Martins Loução (researchers at Museu Nacional de História Natural e Ciência and/or Ce3C, FCUL).

Calendar: 3-8th November 2014

Duration: 36 hours (TP) of lectures and practical sessions

Schedule: 6 hours per day: from 10h-18h, everyday

Objectives

On completion of the course, the students shall have acquired the following knowledge and understanding:

- Describe the main evolutionary acquisitions on groups of the plant kingdom and its adaptative significance.
- Comprehend the modern plant phylogeny and its sources of information.
- Explain the underlying evolutionary mechanisms of diversity and speciation in the plant kingdom.
- Describe the variety of pollination syndromes, reproductive systems and population structures present in the plant kingdom, and explain the mechanisms underlying this diversity.
- Explain and critically analyse how the genetic diversity and evolutionary potential of plant populations are influenced by phenomena like phenotypic plasticity, seed banks, hybridization, polyploidy and postglacial colonization history.
- Formulate hypotheses and propose methods when studying evolutionary phenomena in wild plant species.

This course can have a recognition of 6 ECTs for FCUL PhD students enrolling in it as part of their first doctoral year. For students only requiring 5 ECTs recognized in their specific PhD programmes the last 6 hours of the course are not mandatory and the certificate will be on 'Topics in Biodiversity and Plant Evolution'.

General Plan

1. Evolutionary acquisitions in land plants (Embryophytes): 4 h
2. Phylogeny of land plants. Contemporary sources of information for land plants systematic: 4 h

3. Evolutionary processes and plant population structures. Phenotypic plasticity and adaptation. Ecotypes and clines: 1.5 h
4. Postglacial colonization history of plants in Europe and Atlantic islands. Genetic and biogeographic consequences. Phylogeography: 2 h
5. Pollination and reproductive biology. Plant mating systems. Reproductive costs and strategies in the plant kingdom. Selective processes associated with fertilization and seed development. Evolutionary pressures shaping seed traits: 3 h
6. Allopatric and sympatric speciation in the plant kingdom. Speciation through hybridization and chromosomal changes. Species concepts: 3h
7. Plant life histories: reproductive strategies and seed ecology: Biogeographical and evolutionary aspects of seed dormancy 2 h
8. Biodiversity and Conservation Biology of plants:
 - The Convention on Biological Diversity and the Global Strategy for Plant Conservation: 2.5 h
 - Role of Natural History Museums in plant Biodiversity Conservation: 1.5 h
 - Plant ex-situ conservation: 3 h
 - Biodiversity and plant Conservation Biology: 1.5 h
9. Visits to the Herbaria, Order Beds (Botanic Garden) and Seed Bank: 2 h
10. Theme presentation and discussion: 6 h

Location: Museu Nacional de História Natural e Ciência, MUHNAC. Rua da Escola Politécnica 56/58. 1250-102 Lisboa.

Nº (min, max) students: 6-16

Minimum background: bachelor degree in Biology or related areas

Fee: free for 1st year PhD students in the Doctoral programme in Biology (FCUL), Biodiversity, Genetics and Evolution (UL; UP) and Biology and Ecology of Global Changes (UL, UA); 20 € for PhD students from institutions of the PEERS network (Ce3C, CFE); 100 € for FCUL Master students and unemployed; 150 € for BTI, BI and other PhD students; 200 € for Professional and postdocs.

Deadline for applications: 24 October 2014

Candidates should send a short CV and a motivation letter to Helena Cotrim at the following email address: hmcotrim@fc.ul.pt

