Biodiversity and Plant Evolution

Organized by: Centro de Biologia Ambiental (http://cba.fc.ul.pt/) and Museu Nacional de História Natural (http://www.mnhn.ul.pt/)

Teachers: Manuela Sim-Sim and Helena Cotrim (coordinators), Maria Amélia Martins Loução, Adelaide Clemente, Ana Isabel Correia, Cecília Sérgio, César Garcia (researchers in Museu Nacional de História Natural-CBA).

Calendar: November 4-12, 2010.

Duration: 30 hours (TP) of lectures and practical sessions

Schedule: Intensive regime during along seven days, 4-5 hours per day: from 14h-18/19h, 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, clonality, hybridization, polyploidy and postglacial colonization history.
- Formulate hypotheses and propose methods when studying evolutionary phenomena in wild plant species.

General Plan:

1. Evolutionary acquisitions in land plants (Embryophytes).6 h
2. Phylogeny of land plants. Contemporary sources of information for land plants systematic.3 h
3. Evolutionary processes and plant population structures. Phenotypic plasticity and adaptation. Ecotypes and clines.3 h
4. Postglacial colonization history of plants in Europe and Atlantic islands. Genetic and biogeographic consequences. Phylogeography.3 h

5. Allopatric and sympatric speciation in the plant kingdom. Speciation through hybridization and chromosomal changes. Species concepts.5 h
6. Pollination and reproductive biology. Plant mating systems. Reproductive costs and strategies in the plant kingdom. Selective processes associated with fertilization and seed development.4 h
7. Population dynamics and demography of plant populations. Population models. Clonality, seed banks and life histories.2 h
8. Biodiversity and conservation biology of plants. Consequences of differentiation, hybridization and different species concepts for the conservation value and long-term maintenance of plant diversity. The role of Natural History Museums in biodiversity conservation. In situ and ex situ conservation. Convention on Biological Diversity.4 h

Language: The language of instruction is English if necessary.

Location: The classes take place at the MNHN, as this institution bears theme specialists and specific resources needed for the course (plant databases, bibliography, herbaria, Botanic Garden, and computational and molecular laboratories).

Nº (min, max) students: 4-16

Minimum formation: 'Licenciatura' (bachelor) degree in Biology or related areas

Fee: free for PhD students in the Doctoral programme in Biology (FCUL) or Biodiversity, Genetics and Evolution (UL; UP); 100 euros for master and bachelor students in FCUL; 200 euros for others (pos-doc and students outside FCUL)

Deadline for applications: October 4, 2010
Candidates should send a short CV and a motivation letter to Helena Cotrim at the following email address: hmcotrim@fc.ul.pt