

Evolution and Analysis of Plant Landscape

Code: 42917
ECTS Credits: 6

Degree	Type	Year	Semester
4313774 Land Ecology and Biodiversity Management	OT	0	1

Contact

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Use of Languages

Principal working language: catalan (cat)

Teachers

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Prerequisites

6 credits in botany / plant biology

Notions on the diversity of Iberian vegetable communities. Basic concepts on biogeography, climatology and geography of the Iberian Peninsula.

Objectives and Contextualisation

This module provides students with a wide spectrum of contents and tools with an approach that transcends the geographic and temporal scale, not necessarily centered on those ecosystems and landscapes that are more familiar to us. It is for this last reason that beyond the obligatory vision from the present, this module focuses on the historical processes that have taken place in previous times and they help to interpret the reality of landscapes, ecosystems and present vegetal communities.

In addition to this time dynamic view, we provide a series of tools for spatial analysis (gradient analysis and cartographic modeling) of both vegetation and climatic, edaphic, historic, topologic and anthropic variables that influence its distribution, composition and structure. An example of this is the distribution patterns of plant species and the suitability of potential habitats that enable quantitative characterization of plant ecosystems and obtain a perception of what their evolution may be in the face of the effects of global change. We also provide information about multiple facets of biodiversity (taxonomic, functional and evolutive) and the importance of how to integrate them in the management of biodiversity.

Finally, this module will provide tools to interpret and value the diversity of plant communities and landscape and show students specific cases of their application. For this purpose, emphasis is placed on presentations by experts, technicians and managers directly involved in the design and management of conservation actions and management of spaces or conservation policies.

Competences

- Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
- Deal with the theory and practice of sustainable management and use of biodiversity and of terrestrial and aquatic biotic resources.
- Evaluate and analyse the diversity of animal, plant and fungal organisms from an evolutionary and functional perspective, and their interactions with the medium.
- Sample, handle, identify and characterise animal, plant and fungal samples, by tissues, individuals, communities, populations and landscapes.
- Understand and apply the most cutting-edge and influential theories in terrestrial ecology and conservation of biodiversity, and assess their importance for mitigating the main environmental problems caused by human activity.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Learning Outcomes

1. Assess the biodiversity of flora and vegetation in a particular area and the main factors that threaten its conservation
2. Describe some of the main current advances and controversies in the study of the plant landscape.
3. Evaluate and analyse the processes and factors that shape the plant landscape.
4. Identify and catalogue vegetation and landscape diversity from specific cases.
5. Interpret and evaluate the principles and general applications of the sciences that study the plant landscape and its dynamics.
6. Interpret and evaluate the principles of conservation biology applied to specific fauna.
7. Present the results of a research project in poster format.
8. Propose and evaluate management models for the conservation of plant communities and protected areas.

Content

Habitat definition. Applications.

Classifications systems

Protections and threats

Habitats of the north-eastern Iberian Peninsula

Habitat cartography

Species and habitat distribution models.

Biogeography models

Management and conservation

Methodology

1. Presential activities

1.1. Directed Activities

In the directed activities the expository method will be used accompanied by multimedia materials that reinforce the understanding. Depending on the teacher, the pre-class work will also be encouraged to develop a participatory session in the classroom where there will be room for discussion of targeted texts and seminars.

Dedication time by activity:

Theoretical classes (12 h) and presentations / seminars (4 h)

Field Practices (16 h)

Classroom practice (6 h)

Tutorials in the classroom (2 h)

1.2. Supervised activities

The follow-up of the preparation of the different works and of the field practices will be done through specifically programmed discussion sessions.

2. Autonomous and supervised activities

Students will do tutorial work both theoretical and practical, some individually and others in a group. The work will be based on the use and application of the methodologies treated in the module. These will be reflected in a document that the students will present and defend in a final session.

Distribution of activities:

Literature reading relevant to the class and seminar agenda as well as the final report for the module

Elaboration of a written report

Preparation of an oral dissertation related to the written report

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Computer sessions	6	0.24	6, 3, 2, 4, 5, 8
Field practices	16	0.64	6, 3, 4, 5, 1
Seminars	4	0.16	6, 3, 4, 7, 8, 1
Theory sessions	12	0.48	3, 2, 4, 5
Tutorial sessions. Report and field practices.	2	0.08	7, 8
Type: Supervised			
Report and Dissertation	35	1.4	6, 2, 7, 8
Type: Autonomous			
References search. Report writing.	65	2.6	3, 2, 4, 7, 8, 1

Assessment

The evaluation of the module will be based on several items:

- Evaluation of the participation and progress in the work in the computer classrooms (10% of the final grade)
- Test type test at the end of the theoretical sessions (40% of final grade)
- Written and oral defense of a subject related to the module, groups of 3 students, (50% of the final grade)

In the section of written report and dissertation will be evaluated:

- Use of appropriate information and tools, quality, structuring and correction of exposure
- Ability to synthesize and present information in memory and oral presentation
- Clarity, conciseness and rigor in written and oral expression
- Quality of documentary sources used
- Adequacy to space and time set
- Applicability

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Computer sessions	10%	1	0.04	6, 3, 2, 4, 5, 7, 8, 1
Short tests	40%	3	0.12	6, 3, 4, 5
Written report and dissertation	50%	6	0.24	6, 3, 2, 4, 5, 7, 8, 1

Bibliography

Blanco, E., Casado, M.A., Costa, M., Escribano, R., Garcia, M., Genova, M., Gomez, A., Gomez, F., Moreno, J.C., Morla, J.C., Regato, P. & Sainz, H. 1997. Los bosques ibéricos. Edit. Planeta. Barcelona.

Braun-Blanquet, J. 1979. Fitosociología. Bases para el estudio de las comunidades vegetales. Blume. Madrid.

Briggs, D. & Walters, S. M. 1984. Plant variation and evolution. Cambridge University Press. Cambridge.

Burrough, P. A. & McDonnell, R. A. 1998. Principles of geographical information system. Oxford University Press. Oxford.

Carreras, J. & Ferré A. 2013. Avaluació del grau d'amenaça i de l'interès de conservació dels hàbitats de Catalunya. Departament de Territori i Sostenibilitat de la Generalitat de Catalunya. Barcelona. 130 pp. [<http://hdl.handle.net/2445/53346>]

Carreras, J. & Ferré, A. (eds.). 2014. Cartografia dels hàbitats a Catalunya. Versió 2. Manual d'interpretació. Departament de Territori i Sostenibilitat, Generalitat de Catalunya. Barcelona, 360 pp. [http://atzavara.bio.ub.edu/geoveg/docs/Manual_v2_2014.pdf]

Carreras, J., Ferré, A. & Vigo, J. (eds.). 2015. Manual del Hàbitats de Catalunya. 8 volums. Segona edició. Departament de Territori i Sostenibilitat. Generalitat de Catalunya. [<http://www.ub.edu/geoveg/cat/ManualCORINE.php>]

Conesa, J. A. 1997. Tipologia de la vegetació: anàlisi i caracterització. Servei de Publicacions Universitat de Lleida.

Cox, C.B., Moore, P.D. 2005. Biogeography : an ecological and evolutionary approach. 7th ed. Blackwell Scientific.

Diego. Bennett K. D. 1997. Evolution and ecology: the pace of life. Cambridge University Press, Cambridge.

Folch, R. 1986. La vegetació dels Països Catalans. Ketres Ed. Barcelona.

Folch, R., Franquesa, T. & Camarasa, J.M. 1984. Vegetació. Història Natural dels Països Catalans. vol 7. Ed. Enciclopèdia Catalana. Barcelona.

Franklin, J. 2010. Mapping Species Distributions. Spatial Inference and Prediction. Cambridge University Press. Isbn: 9780521700023.

Gubbay, S. et al. 2016. European Red List of Habitats: Part 1. Marine habitats. Publications Office of the European Union. Luxembourg. 48 p.

Janssen, J.A.M. et al. 2016. European Red List of Habitats: Part 2. Terrestrial and freshwater habitats. Publications Office of the European Union. Luxembourg. 40 p.

Loidi, J. (ed.). 2017. The Vegetation of the Iberian Peninsula. Vol 1. Plant and Vegetation series, 12. Springer. 676 p.

Loidi, J. (ed.). 2017. The Vegetation of the Iberian Peninsula. Vol 2. Plant and Vegetation series, 13. Springer. 640 p.

Lomolino, M.V., Riddle, B.R., Whittaker, R.J. 2016. Biogeography. Fifth Edition. Oxford University Press.

Marull, J.; Pino, J.; Carreras, J.; Ferré, A.; Cordobilla, M.J.; Llinàs, J.; Rodà, F.; Carrillo, E.; Ninot, J.M. 2005. Primera proposta d'índex de valor del patrimoni natural de Catalunya (IVPN), una eina cartogràfica per a l'avaluació ambiental estratègica. Butlletí de la Institució Catalana d'Història Natural 72: 115-138.

Masalles, R.M., Carreras, J., Farràs, A. & Ninot, J.M. 1988. Plantes superiors. Història Natural dels Països Catalans. vol. 6. Enciclopèdia Catalana. Barcelona.

MAPAMA. 2017. Resolución de 17 de febrero de 2017, de la Secretaría de Estado de Medio Ambiente, por la que se establecen tres listas patrón: la de las especies terrestres, la de las especies marinas y la de los hábitats terrestres, presentes en España. BOE, 55, 6 de marzo de 2017, páginas 16648 a 16649.

Ninot, J.M.; Carrillo, E.; Font, X.; Carreras, J.; Ferré, A.; Masalles, R.M.; Soriano, I.; Vigo, J. 2007 Altitude zonation in the Pyrenees. A geobotanic interpretation. Phytocoenologia 37: 371-398.

Pollock, L., Thuiller, W., Jetz, W. 2017. Large conservation gains possible for global biodiversity facets. Nature 546: 141-144

Terradas, J. 2001. Ecología de la vegetación. Ed. Omega. Barcelona.

VV.AA., 2009. Bases ecológicas preliminares para la conservación de los tipos de hábitat de interés comunitario en España. Madrid: Ministerio de Medio Ambiente, y Medio Rural y Marino.
[https://www.mapama.gob.es/es/biodiversidad/temas/espacios-protegidos/red-natura-2000/rn_tip_hab_esp_base]

Vigo, J. 2005. Les comunitats vegetals. Descripció i classificació. Publ. Universitat de Barcelona.

Vigo, J.; Carreras, J. 2003. Los hábitats del proyecto CORINE en el ámbito territorial catalán: delimitación y cartografía. Acta Botanica Barcinonensia 49: 401-420.

Walter, H. 1976. Vegetació i climes del Món. Universitat de Barcelona. Barcelona.

Walter H. 1985. Vegetation of the Earth, Berlin, Springer-Verlag.