

ENVR350: The Natural Environment Of Greece: From Landscape Ecology to Conservation Fall / 2018

Course Instructor(s):

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Course Description

This is a multidisciplinary course on the natural world of Greece, its lands and seas, focusing on biodiversity and on humankind's effects on the natural environment. It is a practical science-based guide to the natural history of Greece and the Mediterranean, aiming to develop skills for field study and act as an introduction to current nature conservation challenges. Field excursions within the unique Mediterranean city of Athens and its surroundings provide students with practical skills, research opportunities as well as hands on experience with nature appreciation. Students will learn to "see" wildlife, to "interpret" ecological patterns to "read" landscapes and become aware of the conservation challenges created by the often conflicting needs of humans and nature. They will become also familiar with main European and national legal and policy provisions for the protection of nature and appreciate the challenges of actual implementation.

Students can expect to gain knowledge of the basic features of nature in Greece and of the factors that affected its evolution, benefiting from the insight of several disciplines, including environmental and natural history, conservation biology, biogeography, and environmental policy.

Course Resources and Activities

Below we describe our explicit goals for this course and your engagement:

Reading: We will read a wide variety of texts: textbooks, papers, reports, news articles, factsheets, etc.

Analyzing and interpreting: Interpreting the natural environment, collecting and understanding the field data, preparing a research project, exploring case studies, and analyzing policy developments constitute essential elements of this course.

Writing: This course involves a significant amount of writing of different kinds. Students are expected to complete short written assignments in the form of short essays – short answers – field reports. The mid-semester project requires also a written submission of a project proposal and outline and a written final presentation of the methodology, findings and discussion of the project results.

Working and thinking with others: Students work in groups throughout the semester in order to complete fieldwork assignments, presentations and the mid-semester project, in a close to real-life simulation of that conservation practice, which requires constant, systemic and interdisciplinary communication.

Presentations: Oral and PowerPoint presentations and a role play exercise form part of this course.

Learning Objectives: By the end of the course, students will be able to:

- Appreciate the geological history, physical geography and climatic features of Greece and understand their relation to ecosystems
- Distinguish the Mediterranean habitat types and landscape
- Link basic evolution and biogeography concepts to present day biodiversity
- Identify basic flora and fauna species
- Explore aspects of humankind's long-term effects, pressures and impact on biodiversity

- Reflect on historical and current sociopolitical aspects of nature conservation in Europe, the Mediterranean and Greece
- Analyze EU and Greek environmental policy advances and challenges
- Delve into the challenges of nature conservation

Course Requirements

Class participation:

Students are expected to attend all classes and field excursions and to complete readings and assignments **before** the relevant class session. An important component of the final grade is the extent and quality of participation in course discussions. Note that one session will be a role-play game.

Field participation:

Part of the course is taught outdoors: Brief field excursions during class hours have been scheduled, while students will be asked to integrate environmental considerations during CYA field trips. Field excursions function as "labs" in this course and aim at: a) on-site knowledge development, b) interpretation skills and field study methods development, and c) an introduction to potential midterm project sites and themes. Students should be prepared for some changes in the timing and location of the field excursions as adjustments (depending on the weather) may need to be made. A few of the field excursions may need to go slightly beyond class time period. Students will be advised and must pay close attention to necessary safety measures and other precautions concerning risks related to outdoor activities.

Assignments:

To receive credit for an assignment, you must turn it in at the beginning of class on the due date. No late assignments will be accepted.

Short written assignments: Students will be asked to complete several short written assignments (e.g. short answer on readings, short essay on a course discussion topic, reflection on CYA field trip) during the semester.

Special Project: Each student will be asked to submit an item or a creation of her/his own choice that will tell a story about one's own relationship with the nature of the Mediterranean. A short text will explain this relation and also discuss how nature is (or can be) something more than a background of our daily lives and what environmental issues you feel are important today. More detailed info will be handed out and discussed allowing for sufficient time to prepare. The project is due on **Dec. 12th**.

Semester project: The semester project will involve group work on a specific topic and will be based largely on original field study. The final project results will be developed and presented in the form a Poster Presentation. The Poster should be including text, pictures, figures, and animation and should be self-explanatory. This presentation will be submitted by email or via an online file sharing program (details to follow) and will be displayed at CYA.

Students are expected to have discussed their project with the course instructors beforehand and to have submitted a **complete project proposal by Oct. 3rd**.

The semester project will be **submitted on Dec 3rd**. Mid-way in their work, on **Nov. 5th**, students will be asked to present advanced drafts of their work, including their research question, their methodology, and their preliminary findings. A short discussion on each group project will follow.

Exams:

Final exam: Wed **Dec. 19 / PM**

Grading and Evaluation

Your grade for this course will be based on the following distribution:

- **Class participation 15%**
- **Semester project 20%**
- **Essay questions on readings 20%**
- **Field Participation 15%**
- **Special Project 10%**
- **Final exam 20%**

Use of Laptops: In-class or on-site use of laptops and other devices is permitted if that facilitates course-related activities such as note-taking, looking up references, and for in-class online exercises. Laptop or other device privileges will be suspended if there are not used for class-related work.

Attendance: Students are expected to attend all classes (including field trips) promptly. CYA regards attendance in class and on-site as essential. Absences are recorded and have consequences. Illness or other such compelling reasons which result in absences should be reported immediately both to the course instructors and the Student Affairs Office.

Policy on Original Work: Unless otherwise specified, all submitted work must be your own, original work. Any excerpts from the work of others must be clearly identified as a quotation, and a proper citation provided. (Check Student handbook, pg. 9)

Accommodations for Students with Disabilities: If you are a registered (with your home institution) student with a disability and you are entitled to learning accommodation, please inform the Director of Academic Affairs and make sure that your school forwards the necessary documentation.

Books, Course Materials, Moodle

- Catsadorakis, G. 2003. Greece's Heritage from Nature. Athens: WWF Hellas. Available from the CYA library. (You will find it on the syllabus as "Catsadorakis").
- Additional readings are available via Moodle or will be handed out.

Recommended Materials

- Digital Camera or a good camera on your cell phone. The **camera** will be especially important for "collecting" images of wildlife, fauna, flora, habitats and landscapes.
- Other useful material includes binoculars and a field note book. In case you decide to buy a new pair of binoculars, contact the course instructors for useful advice.

Class Schedule

Class Day	Day/Date	Topic / Readings / Assignments Due
1	Mon Sept. 10	<p>Course Introduction (P,C,M) & The Mediterranean: brief natural history and its current environmental state (P)</p> <p>Overview of course and explanation of course requirements Evolution of Mediterranean, the "Mediterranean climate", Defining Mediterranean, interactions with adjacent regions, ecological adaptations to climate, human history of land use, current environmental problems.</p> <p>Readings: Blondel, J., Aronson J., Bodiou J.-Y. and Boeuf G. 2010. 1. Setting the Scene. In: <i>The Mediterranean Region; Biological Diversity in Space and Time</i> (2nded). Oxford: Oxford University Press, pp. 1-22. Catsadorakis: Climate, pp. 44-51</p>
2	Wed Sept. 12	<p>Paleogeography and geological history of Greece (P)</p> <p>An overview of geological history. How Greece's landscapes have evolved. The Holocene in Greece – the importance of the last 10,000 yrs. The formation of present ecosystems in Greece. Geomythology: Greek mythology as a result of dramatic geological events.</p> <p>Readings: Catsadorakis: Geology, pp. 21-43 (right-hand pages, plus 22 and 24 left-hand pages).</p>
3	Mon Sept. 17	<p>Terrestrial ecosystems: From phrygana to forests, alpine meadows and wetlands (M)</p> <p>An overview of the different terrestrial and freshwater ecosystems, and the typical "mosaic effect" that characterize the Greek and the Mediterranean natural environment. How do we define the different vegetation/life zones and what are their characteristic species? The relation between climate and vegetation: bioclimatic classification of Greece and the challenge of climate change.</p> <p>Readings: Phitos. D., 1995. The flora and vegetation of Greece: a brief overview. In: <i>The Red Data Book of Rare and Threatened Plants of Greece</i> pp. xxiii-xxxviii. Blondel <i>et al.</i> 2010.5.1. A succession of life zones, pp. 99-103; 6.A patchwork of habitats, pp. 118-133. Catsadorakis: Terrestrial Ecosystems, pp. 77-109 (right-hand pages plus 82, 90-92); Wetlands, pp.58-71; Wetlands, 135-143.</p>
<p>Field trip – Crete</p> <p>Crete is an island that has a diverse and unique natural environment, formed as a product of Greece's rich geological history and particular climate conditions as well as adjustments to human interventions that have had both positive and negative impacts.</p> <p>Students will be asked to complete a short assignment during this field trip.</p>		
4	Mon Sept. 24	<p>Observing and monitoring nature (M, C)</p> <p>What should you consider when planning a biodiversity study? How to observe wildlife; how to collect and manage field data; field protocols. An introduction to the dilemmas of biodiversity inventories and field research methods, Examples of calculating diversity of species.</p>

Readings:

Perlman D.L. and Adelson G. 1997. *Biodiversity – exploring values and priorities in conservation*. Blackwell Science. Cambridge: Massachusetts, pp. 80 and 126-134.
 Roth: Trapping Observations, pp. 14-30.

*** Crete field trip assignment due**

Field excursion to Kareas, Mount Hymettus (M, C)

We visit an area affected by a severe forest fire in order to study the strategies of Mediterranean type ecosystems to cope with fire and also study the extent of forest restoration. Practice on field methods and skills. Apply the methods presented in the previous course and undertake a small-scale biodiversity study.

5 Wed Sept. 26

Readings:

Roth: Trapping Observations, pp. 14-30.
 Review Cainadas *et al.* *Flowers of Athens – a field guide*
 Review Raine: Plants, pp. 5-21.

Flora (M)

Origins and evolution of the Greek flora. Hotspots of diversity and protected sites. General patterns of endemism and species richness, and their relationships with the palaeogeographical and palaeoecological history of Greece. Introductions and alien species.

Readings:

Blondel *et al.* 2.2. Composition of the flora, pp. 32-38; 3.1 Flora, pp. 52-55 and 57-58.
 Phitos. D., 1995. The flora and vegetation of Greece: a brief overview. In: *The Red Data Book of Rare and Threatened Plants of Greece*, pp. xxiii-xxxviii.

6 Mon Oct. 1

IUCN. 2012. IUCN Red List Categories and Criteria: Version 3.1. Second edition. pp. 10-15. Available from:

http://cmsdocs.s3.amazonaws.com/keydocuments/Categories_and_Criteria_en_web%2Bcover%2Bbckcover.pdf

IUCN. Red List Criteria Summary Sheet. Available

from: http://cmsdocs.s3.amazonaws.com/keydocuments/summary_sheet_en_web.pdf

Catsadorakis pp. 104; 119-125.

Review Cainadas *et al.* *Flowers of Athens – a field guide*.

Review Raine: "Plants," pp. 5-21.

*** Kareas field trip assignment due**

Field Excursion to Kaisariani Aesthetic Forest, Mount Hymettus (C, M)

Introduction to protected areas through a visit in a protected area near Athens. We get tuned with nature and observe the vegetation of the Thermo- and Meso-Mediterranean zones. Finally we discuss about restoration.

Readings:

Brown, Tom Jr with Brandt Morgan. 1986. Pathways to nature. In: *Tom Brown's Field Guide: Nature Observation and tracking*. New York: Berkley Books, pp. 11-33.

7 Wed Oct. 3

Raine: The Basics, pp. 3-4.

Roth: The Art of Seeing, pp. 7-14.

Review Cainadas, E., Margaris, N. and Theodorakakis, M. 2000. *Flowers of Athens, A field guide*. Athens, Greece: Patakis publications.

Review Raine: Plants, pp. 5-21.

*** Group Semester Project outline due** (research question, description, methodology)

8	Mon Oct. 8	<p>Fauna: Terrestrial and inland water (M) Terrestrial wildlife: mammals, reptiles, amphibians, invertebrates, birds and freshwater fish; their origins and occurrence. Threatened species and the different threat categories of the IUCN Red List. Basic conservation problems facing wildlife (species and habitats).</p> <p>Readings: Catsadorakis: Amphibians and Reptiles pp. 145-149; Birds, pp. 149-155; Mammals/Other Animals, pp. 157-165; 176 and 180</p> <p>* Kaisariani field trip assignment due</p>
9	Wed Oct. 10	<p>Field excursion: Philopappou Hill (P, M) Introduction to natural heritage in urban environment. Principles for urban parks designing for wildlife.</p>
10	Mon Oct. 15	<p>Life in the Archipelagos (P) Marine ecosystems and biodiversity. Island biogeography and its implications for conservation. Sea-life. Island wildlife. Adaptations to island environment. Alien species on islands. Humankind in the archipelagos (fisheries, adaptations, impacts).</p> <p>Readings: Catsadorakis: Marine and coastal ecosystems, pp. 53-57; The sea, pp. 167-171; The islands, pp. 198. Blondel <i>et al.</i>7.2. Life on islands, pp. 140-146.</p> <p>* Philopappou Hill field assignment due</p>
11	Wed Oct. 17	<p>Field excursion: Acropolis area (P, M) Management and design of urban open space for wildlife. Can wildlife coexist with other human activities in popular recreation and tourist areas?</p>
12	Mon Oct. 22	<p>Natural heritage in urban environments (P) Wildlife in modern and old cities, villages and archeological sites. Conservation and management of urban wildlife, restoration of urban habitats. Urban Planning for Humans and Wildlife. Urban wildlife and biodiversity conservation.</p> <p>Readings: The urban Wildlife Group: Urban Wildlife Basics: http://urbanwildlifegroup.org/urban-wildlife-information/ Rose Buchanan in Landscapearchitects Network: 10 reasons why cities should daylight rivers: http://landarchs.com/10-reasons-why-cities-should-daylight-rivers/ Elmqvist, T et al (2015). Benefits of restoring ecosystem services in urban area. Current opinions in Environmental Sustainability, 14: http://www.sciencedirect.com/science/article/pii/S1877343515000433 American Society for Landscape Architects: Designing neighborhoods for people and wildlife: https://www.asla.org/sustainablelandscapes/Vid_Wildlife.html (summary)</p> <p>* Acropolis field trip assignment due</p>

Field trip Peloponnese –

As you travel across the Peloponnese you will have many opportunities to see many of the elements of the natural environment that we have studied so far. During one stop, towards the end of the trip, we will join you. We will visit together the **Kaiafas** beach.

While all CYA students will be attending, given your advanced knowledge of Greek nature, **you will be asked to complete a separate short assignment during the visit.**

- 13 Mon Oct. 29 **Cultural landscapes – the significance of traditional land uses (P)**
 “Natural” vs “man-made” habitats. Farming, shepherding and other patterns of human use on the countryside as the key factors for shaping agricultural ecosystems - habitats and wildlife. Species and habitat management challenges: “hands on” or “hands off”? – lessons for modern conservation and restoration actions. Greek Crisis: impacts on land use. Agri – environment schemes as tools for biodiversity conservation.

Readings:

Blondel *et al.*10. *Humans as sculptors of Mediterranean landscapes*, pp. 202-234.

- 14 Wed Oct. 31 **Conservation case-study: forest fires – misfortune or opportunity? (P)**
 How natural history interpretation may help manage a natural catastrophe. The adaptation of Mediterranean ecosystems to fire. Vegetation succession and return of wildlife after fires. Post fire management misconceptions.

Readings:

Grove, A.T. and Oliver Rackham. 2003. Fire: Misfortune or Adaptation? In: *The Nature of Mediterranean Europe: An Ecological History*, New Haven, CT: Yale University Press, pp.217-240 (not the tables).

Blondel *et al.*7.3.1. Dynamics of bird communities after fire, pp. 146-147.

*** Kaiafas field trip assignment due**

- 15 Mon Nov. 5 *** Short group project presentations delivered in class, followed by short discussions on each one.**
 You are expected to present, preferably in a PowerPoint Presentation your work so far and preliminary conclusions.

- 16 Wed Nov. 7 **Water: The need for integrated management of resources (M)**
 Water as a case study: Water resources in the Mediterranean. Is water scarcity a problem in Greece? How does human use affect a natural resource and biodiversity? Policy and management responses and the need for integrated water management.

Readings:

Thivet G. and Blinda M. 2011. 1.2. Water and forest resources and people in the Mediterranean – the current situation. In: Birot Y., Gracia, C. and Palahi, M. (eds). *Water for forests and people in the Mediterranean Region – A Challenging Balance*. Finland: European Forest Institute, pp. 22-27. Available from

http://www.efi.int/files/attachments/publications/efi_what_science_can_tell_us_1_2_011_en.pdf

Gunilla Björklund G., Burke j., Foster S., Rast W., Vallée D. and van der Hoek, W. 2009:8. Managing competition for water and the pressure of ecosystems. In: *The United Nations World Water Development Report 3: Water in a Changing World*. Paris: UNESCO and London:Earthscan, pp. 150-158 (not the Boxes). Available from

<http://unesdoc.unesco.org/images/0018/001819/181993e.pdf#page=152>

C. Revenga C., Robarts R. D. and Zöckler C. 2006: 5.5. Policy and management responses – implementing the ecosystem approach. In: *The United Nations World Water Development Report 2: Water: a shared responsibility*. Paris: UNESCO, and New York: Berghahn Books, pp. 184-189. Available from

<http://unesdoc.unesco.org/images/0014/001454/145405e.pdf#page=175>

- Modern threats and pressures to nature (C)**
 Direct threats and indirect drivers leading to biodiversity loss. Human activities and their impact; assessing anthropogenic threats. Species and ecosystem vulnerability to human pressure. Climate change as a compounding additional threat to biodiversity.
- Readings:**
 Chasek, P. S., *et al.* 2006. *Global Environmental Politics* (4thed). Boulder, CO: Westview Press, pp. 1-11.
- 17 Mon Nov. 12 Millennium Ecosystem Assessment. 2005. *Living Beyond Our Means: Natural Assets and Human Well-Being*. (Statement from the MA Board). Available from: <http://www.millenniumassessment.org/documents/document.429.aspx.pdf>.
- Salafsky N. *et al.* 2008. A Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions. *Conservation Biology*. 22: 897-911.
- WWF. 2016. *Living Planet Report: Risk and Resilience in a new era*. Gland, Switzerland, especially pp. 10-15, 18-55, 58-61, 74-83, Available from: http://wwf.panda.org/about_our_earth/all_publications/lpr_2016/

- Global and EU Nature Conservation Policy I (C)**
 Biodiversity policy: global and European. Introduction to the European Union environmental protection policies and principles. Nature protection policies and legislation: The Nature Directives and the Natura 2000 network.
- Readings:**
 Chasek *et al.*, pp. 159-166.
- 18 Wed Nov. 14 European Commission, 2013. *The EU Explained: Environment*. Luxembourg. Available from: <http://europa.eu/pol/env/flipbook/en/files/environment.pdf>
- Weale, Albert *et al.* *Environmental Governance in Europe*. Oxford: Oxford University Press, 2003. pp. 1-5.
- McCormick, John, 2001. *Environmental Policy in the European Union*. Basingstoke: Palgrave, pp. 238-245.
- European Commission, 2014. The Birds and Habitats Directives. Available from: <http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/nat2000/en.pdf>.

*** Policy assignment due**

Fall Recess

- Nature Conservation Policy in Greece (C)**
 Environment and nature protection policies and legislation in Greece. The evolution of protected areas in Greece. *Special workshop* – Oikoskopio - online practice
- Readings:**
 Apostolopoulou, E. and Pantis, J. D. 2009. Conceptual gaps in the national strategy for the implementation of the European Natura 2000 conservation policy in Greece. *Biodiversity Conservation* 142, pp. 221-237.
- 19 Mon Nov. 26 Vokou, Despoina *et al.* 2014. Ten years of co-management in Greek protected areas: an evaluation. *Biodiversity and Conservation* 23(11) pp.2833-2855.
- * Oikoskopio:** Familiarize yourself with the Oikoskopio online tool: www.oikoskopio.gr (click the English flag to activate the English version)

- Nature Conservation in Practice (C)**
 Effectiveness of nature conservation. Impact of policy implementation. Successes, failures, and challenges for the future.
- 20 Wed Nov. 28
- Readings:**
 Blondel *et al.*: Challenges for the future, pp. 286-312.

European Commission. 2015. *The State of Nature in the EU*. Luxembourg. Available from: http://ec.europa.eu/environment/nature/pdf/state_of_nature_en.pdf
 European Commission. 2017. The Birds and Habitats Directive Fitness Check. Available from: http://ec.europa.eu/environment/nature/legislation/fitness_check/index_en.htm

*** Policy assignment due**

Freshwater and marine protection policy (C)

The EU Water Framework and the EU Marine Strategy Framework Directives. Freshwater and marine conservation challenges.

Readings:

21 Mon Dec. 3 European Commission, 2010. *Water is for life: How the Water Framework Directive helps safeguard Europe's resources*. Luxembourg. Available from: http://ec.europa.eu/environment/water/pdf/WFD_brochure_en.pdf.
 European Commission, 2011. *Seas for life: Protected, Sustainable and Shared Seas by 2020*. Luxembourg. Available from: <https://publications.europa.eu/en/publication-detail/-/publication/ff3c7a4d-7ce5-4427-b9c3-8ed90d58a4a0>

*** Group semester projects due via email or if too large in Dropbox folder that will be shared with you.**

Role play game

22 Wed Dec. 5 *** Prepare for your role:** Students will be provided with a script and assigned different roles so as to argue in favor or against a certain conservation dilemma that will allow the class to practice different knowledge and approaches discussed during the course.

Actors and Institutions in nature policy (C)

Environmentalism and modern environmental action in Greece. Public attitudes and the role of NGOs and volunteer organizations in nature conservation.

Readings:

23 Mon Dec. 10 European Commission. 2013. *EU attitudes towards biodiversity. Flash Eurobarometer – Greece*. http://ec.europa.eu/public_opinion/flash/fl_379_fact_el_en.pdf
 Dimitrakopoulos, P. G., Iosifides, J.N., Florokapi, T., Lasda, O., Paliouras F and Evangelinos KI. 2010. Local attitudes on protected areas: Evidence from three Natura 2000 wetland sites in Greece. *Journal of Environmental Management* 91(9), pp.1847-54

*** Role play assignment due**

Conservation at a time of crisis (C, M, P)

The impacts of the Greece on nature and its protection. Course wrap-up.

Readings:

24 Wed. Dec. 12 Karavellas, D., 2012. Greece's 'invisible' green crisis. *European Voice*. Available from: <http://www.europeanvoice.com/article/imported/greece-s-invisible-green-crisis/73252.aspx>
 Chapron, G., Epstein, Y., Trouwborst, A. and Lopez-Bao, J. V. 2017. Bolster legal boundaries to stay within planetary boundaries. *Nature* 1, pp. 1-5.
 Navigate through the <http://www.wwf.gr/crisis-watch/> website.
*** Having in mind all that we have covered this semester, prepare to discuss the relevance of nature conservation during a period of crisis.**

*** Special project due**