VNIVERSITAT DE VALÈNCIA

Course Guide
43255 Taxonomy: Values and policies in animal conservation

COURSE DATA

Data Subject	
Code	43255
Name	Taxonomy: Values and policies in animal conservation
Cycle	Master's degree
ECTS Credits	3.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
2148 - M.D. in Biodiversity: Conservation and Evolution	Faculty of Biological Sciences	1	First term

Subject-matter

Degree	Subject-matter	Character
2148 - M.D. in Biodiversity: Conservation and Evolution	5 - Cross-disciplinary optional subject areas 1	Optional

Coordination

Name	Department
AZNAR AVENDAÑO, FRANCISCO JAVIER	355 - Zoology

SUMMARY

This course discusses, on the one hand, the intricate relationships that link the ethics and politics of conservation and, on the other hand, how taxonomy profoundly affects these relationships. Determining conservation priorities and allocating resources is not a scientific question, but a political one. The various, often conflicting, political agendas are based on diverse social and individual perceptions that are ultimately based on various, usually implicit, values (ethics, in short) about what is (or is not) to be conserved and why.

In the course we (1) explain the psychological basis for how and why people assign value to things, through a complex interplay between emotion and cognition; (2) establish a taxonomy of values to systematize and identify all those underlying conservation conflicts; (3) link these values to the sociology of conservation; and (4) derive some quantitative (objective) measures of prioritization once conservation values have been identified and agreed upon.

On the other hand, species currently maintain, and are likely to maintain in the foreseeable future, a predominant role in biodiversity conservation policies. However, the use of species as units of conservation is surrounded by problems of a theoretical (what is a species) and operational (how to recognize it) nature, which has led to the formulation of various attempts at solutions ("ecumenical" species concepts, Evolutionary Significant Units, or preservation of evolutionary processes). The implementation of these concepts is far from clear and unanimous; a critical examination is therefore necessary.

The second part of the course attempts to equip the student with scientific principles that will allow him/her to use tools to identify conservation units from a taxonomic and evolutionary point of view, recognizing their virtues and limitations.

Overall, the course seeks to provide elements for the student to form his/her own informed criteria on what to conserve (in a taxonomic context) and why. From this perspective, the course has a fully multidisciplinary and applied vocation. Multidisciplinary, because it brings together concepts from biology and social sciences (especially psychology, ethics and philosophy). Practical, because only by discussing the ethical, political and social intricacies of the actual practice of species conservation will the student be able to transcend a purely 'technical' perspective of the problem.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

It is advisable, but not essential, to have taken a course on evolutionary biology.

OUTCOMES

2148 - M.D. in Biodiversity: Conservation and Evolution

- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.
- Be able to access to information tools in other areas of knowledge and use them properly.
- To be able to assess the need to complete the scientific, historical, language, informatics, literature, ethics, social and human background in general, attending conferences, courses or doing complementary activities, self-assessing the contribution of these activities towards a comprehensive development.

- Stimulate the capacity for critical reasoning and for argumentation based on rational criteria.
- Awaken interest in the social and economic application of science.
- Encourage ethical commitment and environmental awareness.
- Be able to communicate and disseminate scientific ideas.

LEARNING OUTCOMES

After completing the course, the student will be able to:

- Assign all dimensions of value to any entity or process, especially in the field of biodiversity.

- Investigate the values underlying any conservation program focused on species or Evolutionary Significant Units (ESU), and link them to the social construction of these entities.

- Explain the different concepts of species and ESU, recognizing their advantages and problems of application in the area of animal conservation.

- Recognize the political and social conflicts associated with the recognition of conservation units, with special emphasis on geopolitical conservation units.

- Develop protocols for assessing the taxonomic and ecological distinctiveness of any taxon, allowing scientifically informed decisions on the relevance of its conservation.

DESCRIPTION OF CONTENTS

1. Ethics and values in biodiversity conservation: a taxonomy. Criteria for resource prioritization. Criteria for resource prioritization.

Cognitive systems (Kahneman). Conservation psychology and social intuitionism.
Values and conservation: a taxonomy. Moral dilemmas in conservation arising from conflicting values. Flow model in conservation decision making. The social construction and value of species.
Prioritization of resources for conservation: measures and methods. Taxonomic distinctiveness. Phylogenetic distance. Evolutionary distinctiveness. EDGE method.

2. The species as a unit (currency) in biodiversity conservation. Species concepts. Species concepts and conflicts in conservation priorities.

Ontology and epistemology of species. Main species concepts: advantages and problems. Biological concept. Species as genotypic clusters. Genetic distance between populations. DNA barcoding as a method of identification. Ecological concept of species.
Monophyletic / genealogical concept of species. Reciprocal monophyly, exclusivity, genetic coalescence. Phylogenetic concept based on diagnosability. Population aggregation analysis. Cladistic aggregation of haplotypes.
Ecumenical solution: species as metapopulational lineages. Multicriteria analysis for species detection.
Species concepts and conflicts in conservation priorities. Conflicts over objectives. Legal aspects.

Economic aspects. Sociological aspects.

3. Evolutionary Significant Units (ESU). Concepts of ESU. Genetic and ecological distinctiveness as prioritization criteria.

History and need for ESUs. The ambiguity of the concept of distinctive population segment. Evolutionary Significant Unit sensu Ryder (1986). Evolutionary Significant Unit sensu Moritz (1994, 1995). Problems with reciprocal monophyly.
Conservation of evolutionary processes (Crandall et al. 2000). Genetic interchangeability / distinctiveness. Ecological interchangeability / distinctiveness. Detection methods. Management criteria.

4. Conservation taxonomy in the real world: development of a case study.

This is a practical unit in which students must put into play everything they have learned in the previous units. The students, working in groups, should establish, through the elaboration of a conceptual map, a standard protocol that allows them to determine, in a realistic way, if an animal population of meets the requirements to be considered as an entity with taxonomic and/or ecological distinctiveness.

Assuming that the population meets either of the two requirements, the next step is to determine and justify, in an exhaustive manner, the dimensions of value that the different stakeholders (scientists, politicians, citizens, businessmen) would defend, and what role taxonomic evidence plays in decision-making.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	20,00	100
Laboratory practices	10,00	100
Development of group work	5,00	0
Development of individual work	20,00	0
Readings supplementary material	10,00	0
Preparation of practical classes and problem	5,00	0
Resolution of case studies	5,00	0
TOTAL	**75,00**	

TEACHING METHODOLOGY

The following methodologies will be used in the course:

1. Participatory lectures. They will be used to teach the contents of Units 1-3.

2. Practical classes. Unit 4. The main concepts discussed in Units 1-3 will be put into practice. It includes the elaboration of a conceptual map and a role playing.

3. Seminars / workshops. They will be used for students to present real cases in which taxonomy creates or solves conflicts in the conservation of animal species.

4. Problem-based learning. It will be used as a home-work duty where students must solve problems and paradoxes associated with conservation ethics.

5. Case studies. It will be used as the main home-work duty of the course. A complex conservation conflict will be presented in which taxonomy plays a key role. Students will have to analyze all the available information and give a well-grounded opinion based on rational argumentation.

EVALUATION

The learning outcomes will be evaluated as follows:

1. Critical commentary on a taxonomy and conservation issue. Deliverable at the end of the course. 50% of the final grade. There will be a face-to-face discussion in which the students, by groups (number of students per group depending on the number of students enrolled).

2. Problem solving. Activity by groups (number of students per group depending on the number of students enrolled). Deliverable throughout the course. 15% of the final grade.

3. Poster on the application of concepts to a practical case of distinctiveness criteria. Group activity. Face-to-face presentation (it is not necessary to submit written work). Compulsory: 35% of the final grade. Equal grade for all members of the group.

All items must have a score equal to or higher than 5.

REFERENCES

Basic

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Additional

- Aznar, F.J., Córdoba, A.I., Fernández, M., et al. (2013) How students perceive the university`s mission in a Spanish university: liberal versus entrepreneurial education? Cultura y Education, 25(1), 17-33.
- Marmaneu J.M., Aznar F.J. (2017). ¿Por qué conservamos la biodiversidad? Un breve recorrido sociológico, psicológico y moral. Cuadernos de Biodiversidad 52: 18-23.