

**Management and Applications for Animal Diversity**

Code: 42918  
ECTS Credits: 6

| Degree  | Type | Year | Semester |
|---|------|------|----------|
| 4313774 Terrestrial Ecology and Biodiversity Management | OT   | 0    | 1        |

## Contact

Name: Fernando Garcia del Pino

Email: fernando.garcia@uab.cat

## Teachers

Maite Carrasson Lopez de Letona

Santiago Lavin Gonzalez

Manel López Béjar

Emmanuel Antonio Serrano Ferron

Ricardo Caliarí Oliveira

Ana Morton Juaneda

Anna Soler Membrives

## Use of Languages

Principal working language: spanish (spa)

## Prerequisites

A working knowledge of the material of the course "Bases for the management and conservation of biodiversity" is required

## Objectives and Contextualisation

There are many perspectives about the management of the fauna, and this module will address several of them. One of the best known is the management of threatened wildlife. In the module "Bases for the Management and Conservation of Biodiversity", the student acquires a basis to understand and to analyze the different strategies of conservation of threatened fauna. The objective of this module is to provide the student with a deeper knowledge and experience on wildlife conservation from the practical point of view. To do this, we will study various cases of wildlife conservation programs given by professionals from the administration and other institutions that are carrying out wildlife management and conservation programs in our closest environment. Likewise, the aim is to introduce the student to the study and analysis of hunting management and the health problems that it entails, as well as fishery management in the marine environment. In both cases, we will explain the theoretical bases of management and we will give to the student the tools for the development of the strategies used for this management. Finally, the module also analyzes two applications of the fauna. On the one hand, we study the use of animals (predators, parasitoids and entomopathogens) as biological control agents both within the framework of agroecosystems with Integrated Pest Management and with organic production. On the other hand, we will analyze the fauna as bioindicator, with special emphasis on fauna as a bioindicator of environmental stress.

## Competences

- 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.
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise a project.
- 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. Advise companies and other entities working in the field of fauna management and biocontrol techniques.
2. Analyse and assess experiences in management of threatened fauna, hunting and fishing.
3. Assess fauna diversity and programmes to manage key species in Catalonia.
4. Critically analyse the conservation conditions of communities, species and habitats.
5. Develop and apply biological control techniques.
6. Develop and apply biological monitoring systems for the quality of the medium.
7. Identify some of the main current advances and controversies in the management and applications of fauna.
8. Use the main tools for searching in specialist literature.

## Content

### 1. Fauna Applications:

#### 1.1. Animals as biological pests control agents:

- Introduction to Biological Control. Strategies in the use of natural enemies.
- Use of predators and parasitoids.
- Use of entomopathogenic nematodes.

#### 1.2. The fauna in relation to the quality of the habitat:

- Bioindicators: types and characteristics. Selection of useful bioindicators.
- Systems of monitoring the quality of the environment and methods.
- Biomarkers.

### 2. Fauna Management:

#### 2.1. Hunting Management and health problems:

- Alternative management of game-hunting.
- Ecopatology and Health Management. Ecological consequences of the management of animal populations: the hunting management. Sanitary monitoring of wildlife. Diseases of wildlife.
- Field practice: Study the long-term monitoring program of two populations of Pyrenean chamois (*Rupicapra pyrenaica pyrenaica*) in the National Game Reserve of Freser-Setcases.

#### 2.2. Fisheries management in the marine environment:

- Evaluation of fishing resources: from the mono-specific vision to the holistic management.
- Practical cases of modelling of fish stocks according to different bio-economic models through specific software (MECON, MEFISTO, among others).

- Management tools: discussion of the different management strategies with current practical cases.

### 3. Threatened Fauna Management:

#### 3.1. Experiences in management of threatened fauna: Conferences and debates with specialists in fauna management in Catalonia:

- Conservation of the Bonelli's eagle (*Aquila fasciata*) in Catalonia
- Management and conservation of steppe birds: the case of steppe areas in Catalonia.
- Using reptiles as a model for identifying priority areas for conservation: the example of the Cape Verde Archipelago.
- Conservation of the brown bear (*Ursus arctos*) and management of the wolf (*Canis lupus signatus*) in Catalonia
- Field practice: Study of the management of the black vulture (*Aegypius monachus*) and other necrophagous birds as well as the management of livestock in the natural area of the Muntanyes d'Alinyà.

## Methodology

Several teaching-learning strategies will be combined in order to achieve the objectives of the course: lectures, seminars, case study, field practices.

Throughout the module the students will carry out supervised works. The works will be focused on the resolution of practical case studies and a report on the case.

The elaboration of the report of the case study will be done through scheduled tutorial sessions.

There will be two field practices and four sessions of specialized seminars on wildlife conservation cases.

1. Report of the case study: every two students will solve a case. There will be 4 cases to choose, one per group.

The adjudication of the case will be made by order of request to Fernando.Garcia@uab.cat. In the request for each case, the name of the two students who will work together and a list of 2 cases in order of preference must be included.

The report to be presented will consist of the answers to the questions of each case, perfectly documented with the consulted bibliography (maximum 5 pages- at 1.5 spacing; "Times New Roman" type font, size 12- including the bibliography consulted ).

The students, on the date indicated, must deliver the report of the case to their corresponding tutor. Afterwards, there will be a seminar to present all the cases, where each group will have to defend, in front of the rest of classmates, the answers they have given of the case.

2. Questionnaires about field practices and seminars on fauna conservation cases: an evaluation activity will be carried out of each field practice and seminar.

3. Written exam with short questions.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Activities

| Title          | Hours | ECTS | Learning Outcomes |
|----------------|-------|------|-------------------|
| Type: Directed |       |      |                   |

|                                       |    |      |                     |
|---------------------------------------|----|------|---------------------|
| Field work                            | 12 | 0.48 | 7, 4, 3             |
| Lectures                              | 17 | 0.68 | 2, 6, 5, 7, 4       |
| Specialized seminars                  | 12 | 0.48 | 2, 6, 5, 7, 4, 8, 3 |
| Type: Supervised                      |    |      |                     |
| Tutorials                             | 6  | 0.24 | 2, 1, 6, 5          |
| Type: Autonomous                      |    |      |                     |
| Personal study and self-learning work | 57 | 2.28 | 2, 6, 5, 7, 4, 8, 3 |
| Prepare individual works              | 45 | 1.8  | 2, 1, 6, 5, 8       |

## Assessment

There is a continuous evaluation process throughout the course that includes more than three evaluation activities, of different typologies, distributed throughout the course, and none of the activities represents more than 50% of the final grade.

The evaluation is based on the following elements:

### 1.- Report and presentacion of the case

The evaluation of this part is based on the following elements:

- The quality of the reports (form: synthesis, writing, etc.).
- The correct answer of the questions raised in the study case (background: content).
- Defence in oral presentation of the study case
- Adaptation to the rules, etc.

This evaluation has a global weight of 30% of the final grade.

**IMPORTANT:** in order to be able to do the average with the rest of the evaluable activities, it is necessary to obtain a final minimum mark of the exams of 4

### 2.- Reports of field practices and seminars

This evaluation has a global weight of 25% of the final grade.

**IMPORTANT:** in order to be able to do the average with the rest of the evaluable activities, it is necessary to obtain a final minimum mark of the exams of 4

### 3.- Exam with short questions

**IMPORTANT:** in order to be able to do the average with the rest of the evaluable activities, it is necessary to obtain a final minimum mark of the exams of 4

This evaluation has a global weight of 35% of the final grade.

### 4.- Attendance to class and participation

This evaluation has a global weight of 10% of the final grade.

**IMPORTANT:** in order to be able to do the average with the rest of the evaluable activities, it is necessary to attend 80% of all academic activities

The minimum global qualification required to pass the subject will be 5 out of 10. To be eligible for the retake process, the student should have been previously evaluated in a set of activities equaling at least two thirds of the final score of the course or module. Thus, the student will be graded as "No Avaluable" if the weightin of all conducted evaluation activities is less than 67% of the final score.

Plagiarism: In the event of a student committing any irregularity that may lead to a significant variation in the grade awarded to an assessment activity, the student will be given a zero for this activity, regardless of any disciplinary process that may take place. In the event of several irregularities in assessment activities of the same subject, the student will be given a zero as the final grade for this subject.

## Assessment Activities

| Title  | Weighting | Hours | ECTS | Learning Outcomes   |
|--|-----------|-------|------|---------------------|
| Attendance to class and participation            | 10%       | 0     | 0    | 2, 1, 6, 5, 7, 4, 3 |
| Exam   | 35%       | 1     | 0.04 | 2, 6, 5, 7, 4       |
| Questionaries about field practices and seminars | 25%       | 0     | 0    | 2, 4, 3             |
| Report and presentation of the case              | 30%       | 0     | 0    | 2, 1, 6, 5, 8       |

## Bibliography

- Bas, C. 2002. El Mediterráneo: Recursos vivos y explotación. Ed. Ariel Ciencia. Edición actualizada (2006)
- Bellés, X. 1995. Entendre la Biodiversitat. Ed. Magrana. Barcelona
- Eilenberg, J., Hokkanen, H.M.T. 2007. An ecological and societal approach to Biological Control. Springer Ed. 322 pp.
- FAO SOFIA Report, 2006. The state of world fisheries and aquaculture, disponible en <http://www.fao.org/fishery>
- Fränzle, O. 2005. Complex bioindication and environmental stress assessment. Ecological Indicators 6: 144-136.
- Hadlik, C.M.; Hadlik, A.; Linares, O.F.; Pagezy H. et al. 1993. Tropical forests, perople and food: Biocultural interactions and applications to development. UNESCO/Parthenon Publ. Vol. 15 in Man and the Biosphere Series, Paris.
- Hajek, A. 2004. Natural Enemies: an introduction to biological control. Cambridge University Press. UK. 378 pp.
- Hokkanen, H., Lynch, M.J. 2003. Biological control benefits and risks. Cambridge University Press. UK. 304 pp.
- Jacas, J., Caballero, P. Avilla, J. 2005. El control Biologico de plagas y enfermedades. Universitat Jaume I. Castellon de la Plana. 223 pp.
- Lleonart, J. et al.. 1986. L'Oceanografia II. Recursos pesquers de la mar catalana. Quaderns d'Ecologia Aplicada, no 9. Diputació de Barcelona.
- Martí et al., 2007. Indicators guidelines. To adopt an indicators-based approach to evaluate coastal sustainable development. Government of Catalonia. Barcelona.
- Mayor, P.; Santos D.; Lopez-Bejar, M. 2007. Sostenibilidad en la Amazonía y cría de animales silvestres. CETA, Iquitos, Peru.
- Pineda et al. 2002. La diversidad biológica de España. Prentice Hall. Madrid.
- Robinson, J.G.; Redford, K.H. 1991. Neotropical wildlife use and conservation. The University of Chicago Press, Chicago.
- Tudela, S. 2004. Ecosystem effects of fishing in the Mediterranean. FAOGFCM Studies and Reviews No. 74; disponible también en <http://www.fao.org/fishery>
- Vicent, C., Goettel, M.S., Lazarovits. 2007. Biological Control a global perspective. CABI Ed. London. 440 pp.

## **Software**

Microsoft Office