

COURSE DESCRIPTION

COURSE DETAILS

Title (of the course): **WILDLIFE MANAGEMENT AND CONSERVATION**

Code: 642019

Degree/Master: **GRADO DE INGENIERÍA FORESTAL**

Year: 4

Field:

Character: OPTATIVA

Duration: SECOND TERM

ECTS Credits: 4.0

Classroom hours: 40

Face-to-face classroom percentage: 40.0%

Study hours: 60

Online platform: <http://moodle.uco.es/m2324/>

LECTURER INFORMATION

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PREREQUISITES AND RECOMMENDATIONS

Prerequisites established in the study plan

No prerequisites required.

Recommendations

Subject Ecología y Fauna Forestal taken and passed.

INTENDED LEARNING OUTCOMES

- | | |
|------|---|
| CB1 | Knowledge of raw, scientific and technological materials which allow constant learning, as well as an capacity to adapt to new situations and changing surroundings |
| CB2 | Capacity to resolve problems with creativity, initiative, methodology and critical reasoning |
| CB4 | Capacity to search for the norms and regulations relevant to one's present environment and put them into use. |
| CEC2 | Capacity to learn, understand and utilize principles of: Zoology and Entomological Forestry. |

COURSE DESCRIPTION

OBJECTIVES

Comprehension of bases and methods to estimate population size of vertebrate wild animals and principles on wildlife management for conservation and recovery of endangered species.

Comprehension of the main features concerning wildlife management such as: population dynamics, habitat, diseases, genetics, carrying capacity and interactions among those factors. Description of some endangered species as well as actions and strategies to be implemented to recover endangered wildlife populations.

CONTENT

1. Theory contents

Part One. ESTIMATING POPULATION SIZE IN VERTEBRATES

Theme 1. SPATIAL AND TEMPORAL DISTRIBUTION OF ANIMAL POPULATIONS

The concept of animal population

Spatial patterns of animal populations

Spatial distribution analysis

Temporal distribution of vertebrate populations.

Theme 2. COMPLETE CENSUS OR TOTAL COUNTS

Total counts of social units

Census of breeding colonies

Census of post-breeding gathering

Others total counts methods:

Complete removal

Thermal scanners.

Theme 3. DISTANCE METHODS

Itineraries of census

Itineraries based on elements interception

Hayne estimator and variants

Itineraries based on contacts distribution

Line transect

Finnish transect

Emlen method

Crain et al. method

Bird census stations (variable circular plots)

Järvinen method

Emlen method.

Theme 4. CAPTURE CONTROL METHODS

Change in ratio or Kelker method

Index-removal or Eberhardt method

Catch-effort methods

Theme 5. CAPTURE, MARKING AND RECAPTURE METHODS

Capture and branding

Closed populations

One mark, one recapture

Petersen estimator

Chapman estimator

Bailey estimator

Sample size and confidence interval calculation

Several marks and recaptures

Schnabel weighted mean



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COURSE DESCRIPTION

Nonweighted mean

Open populations

Triple capture

Jolly-Seber method.

Theme 6. ABUNDANCE INDICES

Direct count

Captures

Tracks and traces

Frequency.

Theme 7. BIODIVERSITY INDICES

Definitions and calculation

Part Two. CONCEPTS AND TOOLS FOR WILDLIFE MANAGEMENT

Theme 8. POPULATION DYNAMICS AND MAIN INTERACTIONS

Definitions

Models for population dynamics

Main inter and intra specific interactions.

Theme 9. HABITAT AND WILDLIFE MANAGEMENT

Definitions. Use and selection of habitat

Habitat structure and components (food and shelter requirements)

Home range. Habitat improvement actions.

Theme 10. CARRYING CAPACITY

Definition

Methods to assess carrying capacity.

Theme 11. FEATURES CONCERNING WILDLIFE MANAGEMENT

Food selection. Overgrazing problems

Genetics: basic concepts and wildlife management implications

Wildlife diseases: Prevention and therapy strategies.

Theme 12. DESCRIPTION OF SOME ENDANGERED WILDLIFE SPECIES

Morphological, habitat, food, distribution features

Problems associated with species conservation.

Theme 13. WILDLIFE RECOVERY STRATEGIES

Legal, national and international protection rules

Different status of protection

Multispecific strategies: flagship, key species. Wildlife corridors

Monospecific and/or selected species strategies: Recovery plans for a single or a group of species.

2. Practical contents

Classroom exercises, presentations and case studies.

Visit to natural areas and/or wildlife rescue and recovery facilities.

SUSTAINABLE DEVELOPMENT GOALS RELATED TO THE CONTENT

Good health and well-being

Responsible consumption and production

Life below water

Life on land

Partnerships for the goals

COURSE DESCRIPTION

METHODOLOGY

General clarifications on the methodology (optional)

Students will have all the class materials in English and Spanish.

Methodological adaptations for part-time students and students with disabilities and special educational needs

Individual final examination with, if necessary, adaptations in case of sanitary alarm.

Face-to-face activities

Activity	Large group	Total
<i>Assessment activities</i>	2	2
<i>Case study</i>	6	6
<i>Excursions</i>	5	5
<i>Lectures</i>	27	27
<i>Total hours:</i>	<i>40</i>	<i>40</i>

Off-site activities

Activity	Total
<i>Exercises</i>	14
<i>Information search</i>	6
<i>Reference search</i>	2
<i>Self-study</i>	38
<i>Total hours</i>	<i>60</i>

WORK MATERIALS FOR STUDENTS

Case studies
Dossier
Exercises and activities
Oral presentations
References

Clarifications

All working materials available at Moodle platform

COURSE DESCRIPTION

EVALUATION

Intended learning	Exams	Log	Oral Presentation	Problem solving
CB1	X			
CB2				X
CB4			X	
CEC2	X	X		X
Total (100%)	50%	10%	20%	20%
Minimum grade	5	7	5	5

(*)Minimum mark (out of 10) needed for the assessment tool to be weighted in the course final mark. In any case, final mark must be 5,0 or higher to pass the course.

Method of assessment of attendance:

10% of the final mark, provided attendance is over 70% of the time, including the field trip.

General clarifications on instruments for evaluation:

Final exam

Assignments as oral presentations

Attendance sheets referred to the classroom and outdoor visit.

In case of failing the subject, the items passed are kept within the same academic year.

Clarifications on the methodology for part-time students and students with disabilities and special educational needs:

Those students will be excused to be evaluated except for the exam. To pass the module they should mark over 5 in the final exam.

Clarifications on the evaluation of the extraordinary call and extra-ordinary call for completion studies:

Students will be evaluated with a theoretical-practical exam. To pass the course they should mark over 5 on the exam.

Qualifying criteria for obtaining honors:

Marks rating over 9 in all the evaluation items

BIBLIOGRAPHY

1. Basic Bibliography

Bookhout, T. A. (ed.). 1996. Research and management techniques for wildlife and habitats. Fifth ed., rev. The Wildlife Society, Bethesda, Md, 740 pp.

Buckland, S.T., D.R. Anderson, K.P. Burnham, and J.L. Laake. 1993. Distance sampling: estimating abundance of biological populations. Chapman and Hall, New York, N.Y. 446 pp.

McComb, B.C. 2008. Wildlife habitat management. Concept and applications in forestry. CRC Press (ed.).



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New York.

Payne, N. F. 1992. Techniques for wildlife habitat management of wetlands. McGraw-Hill bio-logical resource management series. New York. 549 pp.

Shaw, J. H. 1985. Introduction to wildlife management. McGraw-Hill series in forest resources. New York. 316 pp.

Telleria, J. L. 1986. Manual para el censo de los vertebrados terrestres. Editorial Raíces. Madrid. 279 pp.

2. Further reading

Brownie, C., D. R. Anderson, K. P. Burnham, and D. S. Robson. 1985. Statistical inference from band recovery data: a handbook, 2nd ed. U. S. Fish and Wildl. Serv. Res. Publ. 156, Washington, D. C. 305pp.

Burnham, K. P., J. L. Laake, and D. R. Anderson. 1980. Estimation of density from line transect sampling of biological populations. Wildl. Monogr. 72:1-202.

Burnham, K. P., D. R. Anderson, G. C. White, C. Brownie, and K. H. Pollock. 1987. Design and analysis methods for fish survival experiments based on release-recapture. Am. Fish. Soc. Monogr. 5:1-437.

Burnham, K. P. 1993. A theory for combined analysis of ring recovery and recapture data. Pages 199-213 in J.-D. Lebreton and P. M. North, eds. Marked Individuals in the Study of Bird Popula-tion. Birkhauser Verlag, Basel, Switzerland.

Chao, A. 1988. Estimating animal abundance with capture frequency data. J. Wildl. Manage. 52:29-300.

Chao, A. 1989 Estimating population size for sparse data in capture-recapture experiments. Biometrics 45:427-438.

Chao, A., S. M. Lee, and S. L. Jeng. 1998. Estimation population size for capture-recapture data when capture probabilities vary by time and individual animal. Biometrics.

Hudson, D. J. 1971. Interval estimation from the likelihood function. J. R. Stat. Soc. B 33:256-262.

Krebs, C. J. 1989. Ecological methodology. Harper and Row, Publ., New York. 654pp.

Laake, J. L., S. T. Buckland, D. R. Anderson, and K. P. Burnham. 1994. DISTANCE User's Guide. Colorado Cooperative Fish & Wildlife Research Unit, Colorado State University, Fort Collins, CO. 84 pp.

Lebreton, J.-D., K.P. Burnham, J. Clobert, and D.R. Anderson. 1992. Modeling survival and testing biological hypotheses using marked animals: case studies and recent advances. Ecol. Monogr. 62:67-118.

Otis, D.L., Burnham, K.P., White, G.C., Anderson, D.R. 1978. Statistical inference from cap-tured data on closed animal populations. Wildlife Monographs nº 62. The Wildlife Society. 135 pp.

Pollock, K. H., and M. C. Otto. 1983. Robust estimation of population size in closed animal populations from capture-recapture experiments. Biometrics 39:1035-1049.

Pollock, K. H., J. D. Nichols, C. Brownie, and J. E. Hines. 1990. Statistical inference for cap-ture-recapture experiments. Wildl. Monogr. 107. 97pp.

Rexstad, E., and K. Burnham. 1991. User's guide for interactive program CAPTURE. Colorado Coop. Fish and Wildl. Res. Unit, Colorado State University, Fort Collins. 29pp.

Seber, G. A. F. 1982. The estimation of animal abundance and related parameters, 2nd ed. Macmillan, New York, NY.

Wheelan, J. 1993. Wildlife management (apuntes de clase). Dpt. Of Environmental Resource Management. Faculty of Agriculture. Univesity College, Belfield, Dublin.

White, G. C., Anderson, D. R., Burnham, K. P., Otis, D. L. 1982. Capture-recapture and re-moval methods for sampling closed populations. Los Alamos Nat. Lab. Report LA-8787-NERP, Los Alamos, New Mexico. 235pp.

COORDINATION CRITERIA

Joint activities: lectures, seminars, visits ...

Visits organization



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SCHEDULE

Period	Assessment activities	Case study	Excursions	Lectures
1# Week	0,0	0,0	0,0	1,5
2# Week	0,0	0,0	0,0	1,5
3# Week	0,0	1,5	0,0	1,5
4# Week	0,0	1,5	0,0	1,5
5# Week	0,0	1,5	0,0	1,5
6# Week	0,0	1,5	0,0	1,5
7# Week	0,0	0,0	0,0	1,5
8# Week	0,0	0,0	0,0	3,0
9# Week	0,0	0,0	0,0	3,0
10# Week	0,0	0,0	0,0	3,0
11# Week	0,0	0,0	0,0	3,0
12# Week	0,0	0,0	0,0	3,0
13# Week	0,0	0,0	5,0	0,0
14# Week	0,0	0,0	0,0	1,5
15# Week	2,0	0,0	0,0	0,0
Total hours:	2,0	6,0	5,0	27,0

The methodological strategies and the evaluation system contemplated in this Course Description will be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required.