# KSH 211 Wildlife Ecology

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|---|---|---|
| **Credit** | : | 3(2-3) |
| **Semester** | : | 3 (odd) |
| **Course format** | : | Classroom lectures and discussions, 2 hours (100 minutes) per week and course practice equal to 3 hours (150 minutes)  per week  for 14 weeks; individual and group assignments. |
| **Pre-requisite** | : | **-** |
| **Lecturers** | : | Prof. Dr. Hadi S. Alikodra, MS (Course coordinator). |
| | | Dr.  Abdul Haris Mustari, MSc.F. |
| | | Dr.  Yeni A. Mulyani,MSc. |

## Course Description

This course will provide students with the knowledge on wildlife ecology (vertebrates) within the context of individual, population to wildlife community.  The main discussions include zoogeography, biome, habitat components, habitat types, environmental factors that influence wildlife, wildlife population, population parameters and population growth, wildlife movement and distribution, wildlife interaction and application of wildlife ecology on wildlife management in natural habitats.  Examples will focus on Indonesian wildlife ecology.  Course practice consists of introduction to wildlife ecology observation in class and outside (around campus, home and protected areas) supervised and individual (in groups).  Students will be supervised in developing proposal for wildlife ecology observation up to writing reports and presentations of observation results.

## Course Objectives

The objective of this course is to give students basic understanding of wildlife ecology so that students will be able to explain wildlife ecological principles, especially on zoogeography, habitat types, environmental factors that effect wildlife, wildlife population, population parameters and population growth, wildlife movement and distribution, wildlife interaction and application of wildlife ecology on wildlife management in natural habitats.

**Learning Outcomes**

**1. General learning outcomes**

Upon successful completion of this course the students will be able to:

a. Explain wildlife ecology within the context of individual, population to wildlife community

b. Explain principles of wildlife ecology and apply them to wildlife management.

c. Conduct wildlife ecology observation

**2. Specific learning outcomes**

Upon successful completion of this course the students will be able to:

a. Explain the context, objectives and linkages with other field of sciences, wildlife potentials and values.

b. Explain global and Indonesia fauna biogeographic regions.

c. Explain the meaning of habitat, habitat components and their functions to wildlife.

d. Explain various types of habitat, wildlife habitat fragmentation and wildlife habitat preference.

e. Explain environmental factors that effect individual wildlife and various wildlife trophic levels.

f. Explain how wildlife adapt to their environment for survival.

g. Explain how wildlife adapt to their environment for survival and maintain its species.

h. Explain wildlife population growth models.

i. Explain various wildlife movement, territories, core area and wildlife territories.

j. Explain wildlife distribution pattern.

k. Explain various inter and intra specific interaction on wildlife.

l. Explain the application of wildlife ecology science in sustainable wildlife population management.

**Structure of Course Delivery**

1. Classroom lectures and discussions.

2. Course practice will be conducted in class and outside class, around campus and outside campus (nearby location and visits to protected area/wildlife reserve).

3. Individual and group reading assignments of papers on wildlife ecology and making reports based on the papers to be discussed in class.

**Major References**

1. Alikodra, H.S. 2002. Pengelolaan Satwaliar, Jilid I. Yayasan Penerbit Fakultas Kehutanan IPB. Bogor.

2. Krebs, C.J. 1978. Ecology: Experimental Analysis of Distribution and Abundance. Second Edition. Harper &Row Publishers. New York.

3. Bailey, J.A. 1984. Principles of Wildlife Management. John Wiley & Sons. New York.

4. Begon, M., Harper, J.L. and Townsend, C.R. 1990. Ecology: Individuals, Populations and Communities (Second Edition). Blackwell Scientific Publications. Boston.

5. Delany, M.J. 1982. Mammal Ecology. Blackie & Sons Ltd. Glasgow.

6. Hildebrand, M. 1988. Analysis of Vertebrate Structure (Third Ed.). John Wiley & Sons, Inc. New York.

7. Vaughan, T.A. 1978. Mammalogy. Sec Ed. W.B. Saunders Company. Philadelpia.

**Teaching Material Support**

The choice of media and type of technology use include:

1. Face-to-face contact.

2. Printed power point presentation. For each topic, power point presentation and module will be available.

3. Reading materials. Students are encouraged to read the recommended text books to enrich their knowledge. Lectures will provide additional materials according to the topic in discussion.

4. Computer

5. Projector Infocus

**Course Outline**

| Topics | Sub-topics | Bloom's Taxonomy | Week |
|---|---|---|---|
| Introduction | 1. History, scope and objectives<br>2. Benefits of wildlife ecology science and relation to other courses<br>3. Wildlife potentials and values | C1 | 1 |
| Zoogeography | 1. Geological history and wildlife distribution<br>2. Global and Indonesian's fauna geographic regions<br>3. Island biogeography<br>4. Global and Indonesia's wildlife diversity | C1 | 2 |
| Wildlife habitat components | 1. Meaning of wildlife habitat<br>2. Habitat functions (food, water, cover, | C1, C2 | 3 |

| Topics | Sub-topics | Bloom's Taxonomy | Week |
|---|---|---|---|
| | 3. mating, roosting and nesting sites) Habitat components (physic, biotic) | | |
| Wildlife habitat types | 1. Habitat types (tropical forest, temperate forest, grassland, savannah) 2. Habitat preference and selection 3. Niche | C1, C2 | 4 |
| Wildlife as individual | 1. Physical and biotic factors affecting individual wildlife 2. Individual physiological adaptation on environmental alteration and food availability 3. Wildlife trophic level (herbivore, carnivore, omnivore, insectivore, frugivore) | C1, C2 | 5 |
| Wildlife as population | 1. Limitation and definition of population 2. Wildlife population parameters (natality, net natality, mortality, net mortality, fecundity and fertility) 3. Life table 4. Species survival curve | C1, C2 | 6 & 7 |
| Wildlife population growth | 1. Growth as a dynamic process 2. Basic model for population growth (exponential, sigmoid/logistic models) 3. Limiting factors for population growth 4. Carrying capacity | C1, C2 | 8 |
| Wildlife movement | 1. Objective of wildlife movement 2. Invasion, distribution, nomad and migration 3. Homerange, core area and territory | C1 | 9 &10 |
| Wildlife distribution | 1. Wildlife distribution pattern 2. Limiting factors to wildlife distribution 3. Influence of wildlife distribution pattern on wildlife management | C1, C2 | 11 |
| Species interaction | 1. Reasons for wildlife interaction 2. Intra and inter-species competitions 3. Predation and herbivory 4. Decomposers and detritivores 5. Parasites and diseases 6. Mutualism | C1, C2 | 12 & 13 |
| Application of wildlife ecology | 1. Case studies in Indonesia and other countries 2. Application of wildlife ecology in wildlife population management | C1, C2, C3 | 14 |

**Potential Course Overlap**

Minimum overlapping will occur with similar topics offered in other courses, including Wildlife Behaviour (KSH212), Wildlife Management (KSH417), Inventory and Monitoring of Wildlife (KSH314) and courses related to ecological principles, such as Forest Ecology (interdepartmental course – SVK212).

**Evaluation and Grading**

**1. Quizzes**

Quizzes in the form of 2-3 short essay questions will be given to provide the students feedbacks on their course performance. The quiz may be given before or just before end of lecture and will cover a topic discussed in the previous lecture. The quiz will be held approximately $\pm$ 10 minutes.

**2. Mid-term Examination**

Mid-term examination will be held during examination period scheduled by Registrar's office (after 7 weeks lecture). The exam will cover course topics delivered in week 1-7. Exam is composed of various types of questions (multiple choice, short answers and essays with major composition in essays).

**3. Final Examination**

Final examination will be held during examination period scheduled by Registrar's office (after 14 weeks lecture). The exam will cover course topics delivered for 14 weeks, with majority will be taken from topics delivered during week 8 to 14. Exam is composed of various types of questions (multiple choice, short answers and essays with major composition in essays).

**4. Course Practice Reports**

Grading of course practice will cover grades from individual and group assignments from quizzes (individual), activities (individual), paper reviews (individual and group), observation proposal (group), report (group) and individual presentation. Proposal and report writings should follow scientific writings. Plagiarized paper will receive zero grade.

Compositions of grading are as follows:

| Assessment Tools | Maximum Score | % of Grade |
|---|---|---|
| Mid-term examination | 100 | 30 |
| Final examination | 100 | 35 |
| Quiz/assignments | 100 | 5 |
| Course practice | 100 | 30 |

Final grade classification: A ($\geq$ 80); B (70-79); C (60-69); D (50-59); E (< 50)

# Coverage of DFORCE Core Competence

# in Wildlife Ecology (KSH 211)

**Code**         **: KSH 211**

**Course**      **: Wildlife ecology**

**Credit**        **: 3(2-3)**

| Code | Core Competencies | Course Content Covered | Cognitive Level | Topic |
|---|---|---|---|---|
| I | Students will be able to understand the scope, objectives and relations with other wildlife ecology sciences and other sciences as well as wildlife potentials and values. | History, scope and objectives | C1 | Introduction |
| | | Benefits of wildlife ecology science and relation to other courses | | |
| | | Wildlife potentials and values | | |
| II | Students will be able to understand world's and Indonesia's biogeographical regions | Geological history and wildlife distribution | C1 | Zoogeography |
| | | Global and Indonesian's fauna geographic regions | | |
| | | Island biogeography | | |
| | | Global and Indonesia's wildlife diversity | | |
| III | Students will be able to understand wildlife habitat functions and habitat components | Meaning of wildlife habitat | C1, C2 | Wildlife habitat components |
| | | Habitat functions (food, water, cover, mating, roosting and nesting sites) | | |
| | | Habitat components (physic, biotic) | | |
| IV | Students will be able to understand wildlife habitat types and preferences | Habitat types (tropical forest, temperate forest, grassland, savannah) | C1, C2 | Wildlife habitat types |
| | | Habitat preference and selection | | |
| | | Niche | | |
| V | Students will be able to understand wildlife physiological adaptation on | Physical and biotic factors affecting individual wildlife | C1, C2 | Wildlife as individual |

| Code | Core Competencies | Course Content Covered | Cognitive Level | Topic |
|---|---|---|---|---|
| | environmental alteration | Individual physiological adaptation on environmental alteration and food availability | | |
| | | Wildlife trophic level (herbivore, carnivore, omnivore, insectivore, frugivore) | | |
| VI | Students will be able to understand limitation and definition of population | Limitation and definition of population | C1, C2 | Wildlife as population |
| | | Wildlife population parameters (natality, net natality, mortality, net mortality, fecundity and fertility) | | |
| | | Life table | | |
| | | Species survival curve | | |
| VII | Students will be able to understand basic models for population growth and limiting factors for population growth | Growth as a dynamic process | C1, C2 | Wildlife population growth |
| | | Basic model for population growth (exponential, sigmoid/logistic models) | | |
| | | Limiting factors for population growth | | |
| | | Environmental carrying capacity | | |
| VIII | Students will be able to understand various wildlife movement, wildlife homerange, core area and territory | Objective of wildlife movement | C1 | Wildlife movement |
| | | Invasion, distribution, nomad and migration | | |
| | | Homerange, core area and territory | | |
| VIX | Students will be able to understand wildlife distribution pattern | Wildlife distribution pattern | C1, C2 | Wildlife distribution |
| | | Limiting factors to wildlife distribution | | |
| | | Influence of wildlife distribution pattern in wildlife management | | |
| VX | Students will be able to understand various wildlife interactions (inter and intra species) | Reasons for wildlife interaction | C1, C2 | Species interaction |
| | | Intra and inter-species competitions | | |
| | | Predation and herbivory | | |
| | | Decomposers and detritivores | | |

| Code | Core Competencies | Course Content Covered | Cognitive Level | Topic |
|------|-------------------|------------------------|-----------------|-------|
| | | Parasites and diseases | | |
| | | Mutualism | | |
| VXI | Students will be able to understand and apply wildlife ecology science in sustainable wildlife population management | Case studies in Indonesia and other countries | C1, C2, C3 | Application of wildlife ecology |
| | | Application of wildlife ecology in wildlife population management | | |

**Assessment Tools to Measure the Achievement of**

**Learning Outcomes in Wildlife Ecology (KSH 211)**

**Code** : **KSH 211**

**Course** : **Wildlife Ecology**

**Credit** : **3(2-3)**

| Code | Core Competencies | Learning Outcome | Bloom's Taxonomy | Assessment Tool(s) | Learning Activities |
|---|---|---|---|---|---|
| I | Students will be able to understand the scope, objectives and relations with other wildlife ecology sciences and other sciences as well as wildlife potentials and values. | Students will be able to explain the scope, objectives and relations with other wildlife ecology sciences and other sciences as well as wildlife potentials and values. | C1 | • Written examinations at different cognitive level (midterm exam). | Classroom lecture and discussion |
| II | Students will be able to understand world's and Indonesia's biogeographical regions | Students will be able to explain world's and Indonesia's biogeographical regions | C1 | • Written examinations at different cognitive level (midterm exam). <br> • Quiz <br> • Written report | Classroom lecture and discussion |
| III | Students will be able to understand wildlife habitat functions and habitat components | Students will be able to explain wildlife habitat functions and habitat components | C1, C2, C3 | • Written examinations at different cognitive level (midterm exam). <br> • Quiz <br> • Written report | • Classroom lecture and discussion <br> • Outdor observation |
| IV | Students will be able to understand wildlife habitat types and preferences | Students will be able to explain wildlife habitat types and  preferences | C1, C2, C3 | • Written examinations at different cognitive level (midterm exam). <br> • Quiz <br> • Written report | • Classroom lecture and discussion <br> • Outdoor observation |
| V | Students will be able to understand wildlife | Students will be able to explain wildlife | C1, C2, C3 | • Written examinations at different cognitive level | • Classroom lecture and discussion |

| Code | Core Competencies | Learning Outcome | Bloom's Taxonomy | Assessment Tool(s) | Learning Activities |
|---|---|---|---|---|---|
| | physiological adaptation on environmental alteration | physiological adaptation on environmental alteration | | (midterm exam).<br>• Quiz<br>• Written report | • Outdoor observation |
| VI | Students will be able to understand limitation and definition of population | Students will be able to explain limitation and definition of population | C1, C2, C3 | • Written examinations at different cognitive level (midterm and final exams).<br>• Quiz<br>• Written report | • Classroom lecture and discussion<br>• Outdoor observation |
| VII | Students will be able to understand basic models for population growth and limiting factors for population growth | Students will be able to explain basic models for population growth and limiting factors for population growth | C1, C2, C3 | • Written examinations at different cognitive level (final exam).<br>• Quiz<br>• Written report | • Classroom lecture and discussion<br>• Outdoor observation |
| VIII | Students will be able to understand various wildlife movement, wildlife homerange, core area and territory | Students will be able to explain various wildlife movement, wildlife homerange, core area and territory | C1 | • Written examinations at different cognitive level (final exam).<br>• Quiz<br>• Written report | • Classroom lecture and discussion<br>• Outdoor observation |
| VIX | Students will be able to understand wildlife distribution pattern | Students will be able to explain wildlife distribution pattern | C1, C2, C3 | • Written examinations at different cognitive level (final exam).<br>• Quiz<br>• Written report | • Classroom lecture and discussion<br>• Outdoor observation |
| VX | Students will be able to understand various wildlife interactions (inter and intra species) | Students will be able to explain various wildlife interactions (inter and intra species) | C1, C2, C3 | • Written examinations at different cognitive level (final exam).<br>• Quiz<br>• Written report | • Classroom lecture and discussion<br>• Outdoor observation |
| VXI | Students will be able to understand and apply wildlife ecology science in sustainable wildlife population management | Students will be able to explain and apply wildlife ecology science in sustainable wildlife population management | C2, C3 | • Written examinations at different cognitive level (final exam).<br>• Quiz<br>• Written report | • Classroom lecture and discussion<br>• Outdoor observation |