

**Biodiversity and Conservation of Animals
In Ireland
BIOL 2251
Summer 2018 (Depart USA 5 July – Return 4 August)
National University of Ireland Maynooth**



Instructor: Dr. James H. Kennedy
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Office Hours: By appointment

Time and Room: T/Th. 0945- 1215 & 1300-1530; Room TBA.

Fridays Field Trips:

Required Text: There will be no required text. Many of the basic readings for the course are posted on Blackboard

ANIMAL BIODIVERSITY and Conservation is a foundation course to develop an appreciation of the life around us. Biodiversity is much more than the numbers of species. It can best be described by its three attributes, composition, structure, and function. Composition, the first and most familiar component of biodiversity, includes species lists and other measures of species diversity such as genetic diversity. Structure refers to the physical organization, from habitats measured within communities to the mosaic pattern of patches and other elements at a landscape scale. Function involves ecological and evolutionary processes, including gene flow, disturbances, and nutrient cycling. Conservation discussed in this course will focus on human impacts to biodiversity and integrative approaches for the protection and management of biodiversity

ANIMAL BIODIVERSITY and Conservation in Ireland

Most countries have similar concerns about the world's biodiversity and conservation. While many of these concerns are universal, the approach to research study and protection of these resources are influenced by culture and economic influences. Many of the issues regarding Irish biodiversity are similar to North America as are the approaches to solve them. Ireland has had many deep-rooted cultural influences on North America. However, as part of Europe, Ireland's biogeography, human history, and social culture are different.

Through interactions (lectures, field trips) with Irish students, faculty and other professionals US students will have the opportunity to learn to listen and think in terms of cultural relativity. Cultural relativity is defined as the ability to view, evaluate, and analyze approaches a culture takes to solve environmental issues by its standards and historical context. These opportunities are what sets this course apart from an on Texas campus course. In addition, the students enrolled in this course represent a diversity of majors and should result in some interesting discussions.

OBJECTIVES: The course aims to provide students with a range of fundamental concepts, and practical applications pertaining to Biodiversity. At the end of the semester, each student is expected to be knowledgeable and competent in the following areas:

- a) Basic knowledge about the diversity and distribution of organisms;
- b) Understanding the links between biodiversity and ecosystem processes and services;
- c) Provide information needed to evaluate the cultural and economic value of biodiversity and to use this to develop conservation plans and policy decisions.

COURSE STRUCTURE

Class meetings (Tuesday & Thursday) will be divided into morning and afternoon segments.

Mornings:

- 1) **Introductory remarks and background information.** Generally, instructor will present this material.
- 2) Student Presentations and student lead discussion of the day's reading/study assignments. I will not expect this to happen the first class day. Each student will be expected to lead a discussion.
- 3) At the close of the morning session, time will be set to write a summary paper that will summarize the topics presented and the discussions. On most days, you will be guided by a series of questions about the material. If time is not sufficient to write the summaries in the morning session, some of the afternoon class time will be used to finalize the paper.
- 4) Afternoon sessions will be spent researching and preparing the topic for the next class meeting.

READINGS: We will not use a book and will rely on book chapters, journal for discussion. The course outline includes references. Most of the base readings posted on Blackboard.

COURSE -TENTATIVE SCHEDULE and TOPICS

Date	Topic	Reference
7 July (Saturday)	Arrival Day, Movie & Pizza, Maynooth mini-orientation	-
8 July (Sunday)	Maynooth and Dublin Orientation (including Guinness Storehouse)	-
Week 1		
The History of Place and Geographical Determinants of BioDiversity Fire, Ice and Human Habitation		
10 July (Tuesday) -AM	Definition of Biodiversity, History of foundations of Biodiversity	BB-Folder – Biodiversity Background
-PM	Preparation of presentation	
12 July (Thursday) -AM	Overview of Biodiversity in Ireland	Lucey and Doris 2001
-PM	Preparations based on Role of Museums and Institutions	BB-Folder Role of Museums- Novacek & Goldberg 2013
13-4 July (Fri.-Sat.)	Galoway Optional overnight trip	
Week 2		
Ecological and Geographic Determinants of BioDiversity		
17 July (Tuesday) -AM	Taxonomy and Inventories Museums	Folder – The Role of Museums & Naturalists
-PM	Giant's Causeway – what is it?	
19 July (Thursday) -AM	Introduction to the Botanical Gardens	http://botanicgardens.ie/
-PM	Trip to the Botanic Gardens (1200)	
20 July (Friday)	Giants Causeway Day Trip-	
21 July (Saturday)	Game of Thrones extended trip	
22 July (Sunday)	Dun Laoghaire & Glendolough Day Trip	
Week 3		
The Problems, Challenges, and (Solutions?) to the Earth's biodiversity.		
24 July (Tuesday) -AM	Preparing students to work in the field of Biodiversity, What is needed	
-PM	Summaries and preparing presentations (topic TBD)	
26 July (Thursday) -AM	Engaging the community	
-PM	Summaries and preparing presentations (topic TBD)	
Week 4		
Frontiers of Biodiversity and Conservation		
31 July (Tuesday) -AM	Challenges – new approaches (or more of the same)	
-PM	Review the course	
2 Aug.(Thursday) -AM	Final class meeting	
-PM	Course overview	

Literature (additional titles may be added).

Biodiversity Background Information

Anonymous. 2018. A Summary of Ecological Principles for Biodiversity (pdf from word doc.)

Darlington, PJ. 1957. Zoogeography; A Geographical Distribution of Animals. Wiley, NY

Gascon et al 2015 The Importance and Benefits of Species. Current Biology 25, R431–R438

Ghilarov et al. 1996. What does biodiversity mean—scientific problem or convenient myth? Trends in Ecology and Evolution, 11: pp. 304-306

Wilson, E.O. 1996. The diversity of life Chapter 1 general introduction
Conservation, Scale, Island Biogeography, SLOSS

MacArthur, R.H. and Wilson, E.O. 1963. An Equilibrium Theory of Insular Zoogeography. Evolution 17(4):373-37

Quammen. D. 1997. The song of the Indri, PP 499-545 in The Song of the Dodo.- Island Biogeography in an Age of Extinctions. Scribner.

Simberloff, D. 1974. Equilibrium Theory of Island Biogeography and Ecology. Annual Review of Ecology and Systematics, Vol. 5 (1974), pp. 161-182

Simberloff & Wilson. 1969. Experimental Zoogeography of Islands: The Colonization of Empty Islands. Ecology 50(2):278-296

Biodiversity & Ecosystem Function

Mills et al 1993. Keystone Species Concept Bioscience 43(4):219-224.

Naeem et al. 1999. Biodiversity and ecosystem functioning: Maintaining Natural Life Support Processes. Issues in Ecology 4:1-11.

Communication-Culture, Community and the Citizen Scientist

Cooper, Arthur Address of the Past President State College, Pennsylvania: August 1982: Why Doesn't Anyone Listen to Ecologists: And What Can ESA Do about it? Bulletin of the Ecological Society of America, 63(4):348-356.

Gadgil et al. Indigenous Knowledge for Biodiversity Conservation. AMBIO 22(2-3): 151-156

Rozzi R, et al. 2006. Ten principles for biocultural conservation at the southern tip of the Americas: The approach of the Omora Ethnobotanical Park. Ecology and Society 11: 43

Rozzi et al 2008. Changing lenses to assess biodiversity: patterns of species richness in sub-Antarctic plants and implications for global conservation. Frontiers Ecology and Environment 6(3):131-137

Rozzi et al 2010. Field environmental philosophy and biocultural conservation at the Omora Ethnobotanical Park: Methodological approaches to broaden the ways of integrating the social

component (“S”) in Long-Term Socio-Ecological Research (LTSER) Sites. *Revista Chilena de Historia Natural* 83: 27-68.

Conservation, Scale, Island Biogeography, and SLOSS

MacArthur, R.H. and Wilson, E.O. 1963. An Equilibrium Theory of Insular Zoogeography. *Evolution* 17(4):373-378.

Quammen. D. 1997. The song of the Indri, PP 499-545 in *The Song of the Dodo.- Island Biogeography in an Age of Extinctions*. Scribner.

Simberloff, D. 1974. Equilibrium Theory of Island Biogeography and Ecology. *Annual Review of Ecology and Systematics*, Vol. 5 (1974), pp. 161-182

Simberloff & Wilson. 1969. Experimental Zoogeography of Islands: The Colonization of Empty Islands. *Ecology* 50(2):278-296

Ireland Biodiversity

Lucey and Doris 2001. Biodiversity in Ireland, A Review of Habitats and Species. EPA (Ireland)

Current topics from Ireland’s published in National Biodiversity Centre.

(<http://www.biodiversityireland.ie/downloads/publications/biodiversity-ireland/>)

Irelands - All Ireland Pollinator Plan

Atlas of Ireland Mammals

Counting Butterflies All over Europe and Ireland

Monitoring Long term changes in the common moths of Ireland

Diatoms- Jewels of our Biodiversity

Ireland’s Biodiversity in 2010 – How Many Species are there in Ireland?

Mercury is Rising – Climate Warmin in Ireland

Citizen Scientists – Tracking Irelands Bees and butterflies.

Museums- Biodiverstiy

Novacek. MJ and Goldberg. SL 2013. Role of Museums and Institutions. pp 404-420 *In Encyclopedia of Biodiversity*, Volume 5. Elsevier

Naturalists, Taxonomy and their Importance

Hallmann et al 2017. More than 75 decline over 27 years in total flying insect biomass in protected areas plos one

Noss, R.F. 1996. The Naturalists are Dying Off. *Conservation* 10(1):1-3.

Carrington, D. 2017. Warning of 'ecological Armageddon' after dramatic plunge in insect numbers. *The Guardian* - Wed 18 Oct 2017

Stager, C. 2018 The Silence of the Bugs. *Opinion New York Times*, 26 may 2018

Plate Tectonics – Continental Drift

Lindeberg, P. (editor) . 2001. This Dynamic Earth: the Story of Plate Techtonics. US Govt Printing office

GRADING: There will be short quizzes after each class. The quizzes will focus most often on definitions and will include, most times, a short discussion question. Final grades will be calculated by averaging the daily quizzes and summaries. Grades will be assigned as follows:

A = 89.5 – 100
B = 79.5 – 89.4
C = 69.5 – 79.4
D = 59.5 – 69.4
F = 59.4 and below

Although I do not anticipate any reason to modify this grading plan, I reserve the right to do so if circumstances warrant. I will inform the class if modifications to the grading scale are necessary.

ATTENDANCE: Attendance is expected. Students are responsible to prepare for class ahead of time, attend class, participate in discussions, and express themselves creatively and concisely in their work.

HEALTH, SAFETY, LEGAL ISSUES ABROAD

UNT's study abroad program will provide guidance regarding legal issues associated with travel to Ireland. They will also provide travel health insurance information via the study abroad application link.

HEALTH, SAFETY, LEGAL ISSUES ABROAD

BEHAVIOR

Study abroad trips require considerable flexibility, maturity, and cultural sensitivity. The culture and the political system you will be exposed to in this class will be different from the US and may provoke strong emotional responses. If any cultural difficulties happen, I hope that you will strive to understand the culture and learn to reason through any uncomfortable, but productive, experiences.

Academic Dishonesty Policy: Students are responsible for reading, understanding, and knowing UNT's Academic Dishonesty Policy that can be found at: http://www.vpaa.unt.edu/academic_integrity.htm.

Disability Accommodation Statement: The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. *Students are strongly encouraged to deliver letters*

of accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, see the Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at 940.565.4323.

Drop/Withdrawal Information: Drop/Withdrawal Information and other important Academic Dates can be found at www.essc.unt.edu/registrar/schedule/scheduleclass.html