



# BIOL887

## Biodiversity Conservation

S1 External 2015

*Dept of Biological Sciences*

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## General Information

Unit convenor and teaching staff

Unit Convenor

David Nipperess

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E8B105

Credit points

4

Prerequisites

GSE804 or (admission to MSc in Biodiversity Conservation or Remote Sensing and GIS or PGDipSc in Biodiversity Conservation or PGCertSc in Biodiversity Conservation or MMarScMgt or MWldMgt or PGDipWldMgt or MConsBiol or GradDipConsBiol or GradCertConsBiol or MBioTech or MBioBus)

Corequisites

Co-badged status

BIOL787

Unit description

This unit deals with the problem of conserving biodiversity as a whole rather than concentrating on individual species or populations. The unit is applied and multidisciplinary, drawing on such areas as ecology, evolutionary biology, biogeography, informatics and statistics. We will explore the concept of biodiversity in both the scientific and legislative arenas. The problem of measuring biodiversity is considered in detail, including the conceptual and practical impediments to measurement. Current and emerging threats to biodiversity are reviewed on a global scale, along with the practical and ethical arguments for conservation. Emphasis is given to analysing and interpreting patterns in biodiversity in space and time as a means of informing conservation decisions.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

Knowledge of conservation biology: demonstrate knowledge of the concepts, principles

and methods of conservation biology as practiced at the scale of ecological communities and above

Analysis and interpretation of biodiversity patterns: acquire, compile and analyse biodiversity data and interpret observed pattern in a conservation context

Conservation monitoring and planning: formulate a plan for the conservation of biodiversity for a specified region, making use of both available data, and additional data collected using a targeted monitoring procedure.

Scientific literacy and communication: Review, critically evaluate and synthesize diverse scientific literature in the area of conservation biology and communicate an understanding of this in a written form.

## Assessment Tasks

Name	Weighting	Due
<a href="#"><u>Annotated Bibliography</u></a>	10%	Week 4
<a href="#"><u>Short Essay</u></a>	25%	Week 7
<a href="#"><u>Online test</u></a>	25%	Week 11
<a href="#"><u>Conservation Plan</u></a>	40%	Week 13

### Annotated Bibliography

Due: **Week 4**

Weighting: **10%**

You will prepare an annotated bibliography for a collection of up to 10 scientific papers that are relevant to one of the essay questions given for the short essay (see below). Marks will be allocated on the basis of breadth of research, the choice of papers (relevance to topic), reflection (not just repeating the article) and writing quality.

On successful completion you will be able to:

- Knowledge of conservation biology: demonstrate knowledge of the concepts, principles and methods of conservation biology as practiced at the scale of ecological communities and above
- Analysis and interpretation of biodiversity patterns: acquire, compile and analyse biodiversity data and interpret observed pattern in a conservation context
- Scientific literacy and communication: Review, critically evaluate and synthesize diverse scientific literature in the area of conservation biology and communicate an

understanding of this in a written form.

## Short Essay

Due: **Week 7**

Weighting: **25%**

You will write a short essay addressing *one* question from the following list:

1. How many species are there on earth?
2. Why are there more species in the tropics than elsewhere?
3. Are some species more worthy of conservation efforts than others?
4. Why do we need biodiversity?
5. What is the single biggest threat to biodiversity in the 21st century?

If you have a different question you wish to research, please discuss your option with the convenor.

This essay needs to be very focussed on answering the question because ***the maximum length is 1500 words!*** This total does not include references. Do not waffle. Be as concise as possible while making extensive use of the peer-reviewed literature to support your case. Don't review each paper in turn but rather determine what are the key points/issues/problems and address these. Importantly, ***provide an answer to the question!*** In other words, come to a decision and state it clearly.

On successful completion you will be able to:

- Knowledge of conservation biology: demonstrate knowledge of the concepts, principles and methods of conservation biology as practiced at the scale of ecological communities and above
- Scientific literacy and communication: Review, critically evaluate and synthesize diverse scientific literature in the area of conservation biology and communicate an understanding of this in a written form.

## Online test

Due: **Week 11**

Weighting: **25%**

Instead of a final exam, there will be an online test to be completed in your own time. The test will consist of short-answer questions and will be based on all lectures, tutorials and assigned readings given up to that point. The test will be available for a period of one week on the iLearn site. Once you begin a test, you will need to complete it within the time limit. Marks and feedback will become available after the test has been closed.

On successful completion you will be able to:

- Knowledge of conservation biology: demonstrate knowledge of the concepts, principles and methods of conservation biology as practiced at the scale of ecological communities and above
- Analysis and interpretation of biodiversity patterns: acquire, compile and analyse biodiversity data and interpret observed pattern in a conservation context

## Conservation Plan

Due: **Week 13**

Weighting: **40%**

You will prepare a conservation plan for prioritising land management and acquisition for conservation purposes in an Australian bioregion (to be determined). We will use existing data on species distributions sourced from the Atlas of Living Australia. From these data, you will interpret biodiversity pattern in order to make decisions about conservation risk and prioritisation. Analyses for this assignment will be conducted during tutorials. Students can collaborate on making a conservation plan but write and submit their assignments individually. The plan is expected to be well illustrated with maps and graphs, have an extensive bibliography, and be **no more than 2000 words** (not including bibliography).

On successful completion you will be able to:

- Knowledge of conservation biology: demonstrate knowledge of the concepts, principles and methods of conservation biology as practiced at the scale of ecological communities and above
- Analysis and interpretation of biodiversity patterns: acquire, compile and analyse biodiversity data and interpret observed pattern in a conservation context
- Conservation monitoring and planning: formulate a plan for the conservation of biodiversity for a specified region, making use of both available data, and additional data collected using a targeted monitoring procedure.
- Scientific literacy and communication: Review, critically evaluate and synthesize diverse scientific literature in the area of conservation biology and communicate an understanding of this in a written form.

## Delivery and Resources

### Technology

This unit requires access to a computer and a reliable internet connection to complete tutorials and assignments. Both weekly tutorials (internal students) and on-campus sessions (external students) will be held in computer labs with the relevant software installed. Students attempting tutorials on their own will need to install particular software packages (details in tutorial notes).

Some of these packages are only available for Windows OS.

## Delivery for internal students

Internal students are expected to attend weekly lectures and tutorials. Times and venues can be found in the university timetable. If unable to make the scheduled times, please discuss options with the convenor.

## Delivery for external students

Lectures are recorded and lectures are made available on the unit website. For tutorials, external students are expected to attend two weekend sessions. The dates for these sessions are: 21-22 March and 16-17 May. **Attendance at the on-campus sessions is strongly recommended** but not compulsory.

## Unit website

Teaching materials and online communications will be via the unit website (ilearn.mq.edu.au).

## Changes since last offering

There have been some minor changes since the last offering (2014) of this unit. An annotated bibliography is now an early assessment item. The online test has a lower weighting with a subsequent increase in weighting for the conservation plan assignment.

## Unit Schedule

Activities are organised into weekly topics. Please note that the current schedule is provisional and is subject to minor changes.

Week	Topic	Lecture	Tutorial
1	Biodiversity and conservation	Biodiversity and conservation	Orientation
2	Measuring biodiversity	Measuring biodiversity	What is biodiversity?
3	Loss of biodiversity	Extinction and threatening processes	Threatened species
4	Habitat loss and fragmentation	Habitat loss and fragmentation	Island biogeography
5	Biodiversity informatics	Biodiversity informatics	Atlas of Living Australia
6	Biodiversity survey	Inventory and monitoring	Surveying biodiversity
7	Valuing biodiversity	Conservation ethics and valuing biodiversity	Biodiversity data analysis
8	Ecological communities	Communities and meta-communities	Mapping and estimating biodiversity
9	Global biodiversity patterns	Global biodiversity patterns	Prioritisation for conservation
10	Conservation biogeography	Conservation biogeography	Gap analysis
11	Conservation planning	Conservation planning	Conservation planning
12	Ecological management and restoration	Ecological management and restoration	Drop-in session
13		No lecture	No tutorial

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide

appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

#### Learning outcomes

- Knowledge of conservation biology: demonstrate knowledge of the concepts, principles and methods of conservation biology as practiced at the scale of ecological communities and above
- Scientific literacy and communication: Review, critically evaluate and synthesize diverse scientific literature in the area of conservation biology and communicate an understanding of this in a written form.

#### Assessment tasks

- Annotated Bibliography
- Short Essay
- Online test
- Conservation Plan

### PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:



## Learning outcomes

- Knowledge of conservation biology: demonstrate knowledge of the concepts, principles and methods of conservation biology as practiced at the scale of ecological communities and above
- Analysis and interpretation of biodiversity patterns: acquire, compile and analyse biodiversity data and interpret observed pattern in a conservation context
- Conservation monitoring and planning: formulate a plan for the conservation of biodiversity for a specified region, making use of both available data, and additional data collected using a targeted monitoring procedure.

## Assessment tasks

- Annotated Bibliography
- Short Essay
- Online test
- Conservation Plan

## PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

## Learning outcomes

- Knowledge of conservation biology: demonstrate knowledge of the concepts, principles and methods of conservation biology as practiced at the scale of ecological communities and above
- Analysis and interpretation of biodiversity patterns: acquire, compile and analyse biodiversity data and interpret observed pattern in a conservation context
- Conservation monitoring and planning: formulate a plan for the conservation of biodiversity for a specified region, making use of both available data, and additional data collected using a targeted monitoring procedure.

## Assessment tasks

- Annotated Bibliography
- Short Essay
- Online test

- Conservation Plan

## PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

### Learning outcomes

- Analysis and interpretation of biodiversity patterns: acquire, compile and analyse biodiversity data and interpret observed pattern in a conservation context
- Conservation monitoring and planning: formulate a plan for the conservation of biodiversity for a specified region, making use of both available data, and additional data collected using a targeted monitoring procedure.
- Scientific literacy and communication: Review, critically evaluate and synthesize diverse scientific literature in the area of conservation biology and communicate an understanding of this in a written form.

### Assessment tasks

- Annotated Bibliography
- Short Essay
- Online test
- Conservation Plan

## PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

### Learning outcome

- Scientific literacy and communication: Review, critically evaluate and synthesize diverse scientific literature in the area of conservation biology and communicate an understanding of this in a written form.

### Assessment tasks

- Annotated Bibliography

- Short Essay
- Conservation Plan

## PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

### **Learning outcomes**

- Knowledge of conservation biology: demonstrate knowledge of the concepts, principles and methods of conservation biology as practiced at the scale of ecological communities and above
- Analysis and interpretation of biodiversity patterns: acquire, compile and analyse biodiversity data and interpret observed pattern in a conservation context
- Conservation monitoring and planning: formulate a plan for the conservation of biodiversity for a specified region, making use of both available data, and additional data collected using a targeted monitoring procedure.

### **Assessment tasks**

- Annotated Bibliography
- Short Essay
- Online test
- Conservation Plan