



# BIOL349

## Biodiversity and Conservation

S2 External 2014

*Dept of Biological Sciences*

### Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	6
<u>Unit Schedule</u>	7
<u>Learning and Teaching Activities</u>	9
<u>Policies and Procedures</u>	9
<u>Graduate Capabilities</u>	10
<u>Changes since First Published</u>	13

#### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

Unit convenor and teaching staff

Unit Convenor

Michelle Leishman

[michelle.leishman@mq.edu.au](mailto:michelle.leishman@mq.edu.au)

Contact via [michelle.leishman@mq.edu.au](mailto:michelle.leishman@mq.edu.au)

Other Staff

Katherine McClellan

[katherine.mcclellan@mq.edu.au](mailto:katherine.mcclellan@mq.edu.au)

Contact via [katherine.mcclellan@mq.edu.au](mailto:katherine.mcclellan@mq.edu.au)

Credit points

3

Prerequisites

BIOL227(P) and BIOL235(P)

Corequisites

Co-badged status

Unit description

This unit covers the major themes of biodiversity and conservation: patterns of biodiversity, principles of conservation biology, human impacts, and management principles. Topics include global biodiversity, threatening processes, protected area and off-reserve conservation, habitat fragmentation, restoration ecology, climate change impacts, and management. Much of the focus is on Australian examples. Field and laboratory work are an important component of this unit and are conducted in two compulsory on-campus sessions.

## 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:

ability to describe the major patterns of biodiversity globally

ability to identify key threatening processes that lead to the loss of biodiversity

ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques

able to use principles of conservation biology to describe and evaluate conservation management options for a particular case

## Assessment Tasks

Name	Weighting	Due
<u>Oral seminar</u>	10%	23-24 August
<u>Blog</u>	5%	23 August & 1 September
<u>Draft recovery plan</u>	20%	15 September
<u>MQ Ecology Reserve PoM</u>	30%	13 October
<u>Participation</u>	5%	throughout semester
<u>Final exam</u>	30%	Exam period

### Oral seminar

Due: **23-24 August**

Weighting: **10%**

You must prepare a 10 minute talk that is a summary and critical appraisal of a journal article chosen from the recent (last 5 years) conservation biology literature. The article you choose should be reporting and interpreting new information, not a review article or opinion piece. Please check your article is suitable with the unit convenor at least one week before the on-campus session. Students will be assessed on the seminar content and presentation quality, and their ability to answer questions. Students will also be assessed on their contribution during question time of the other student talks.

On successful completion you will be able to:

- ability to describe the major patterns of biodiversity globally
- ability to identify key threatening processes that lead to the loss of biodiversity
- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques

### Blog

Due: **23 August & 1 September**

Weighting: **5%**

You should prepare a 500 word post about the article you presented for the oral seminar and post it via the iLearn website onto the unit's 'The Conservation piece' blog. Follow the style of

websites such as the environmental research briefs of The Conversation (<http://theconversation.edu.au/pages/environment>) (Due **23rd August**).

You should look at the other student's posts and comment (intelligently and constructively) on at least 3 on the website (Due **1st September**).

On successful completion you will be able to:

- ability to describe the major patterns of biodiversity globally
- ability to identify key threatening processes that lead to the loss of biodiversity
- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques

## Draft recovery plan

Due: **15 September**

Weighting: **20%**

You will write a draft recovery plan for a species of your choice whose life-history and circumstances interest you. You will first select a species that doesn't already have a recovery plan. From the literature you will identify the threats challenging this species' persistence and suggest management strategies necessary to mitigate these threats. Finally, you will suggest performance criteria to measure and evaluate the efficacy of your recommended strategies.

On successful completion you will be able to:

- ability to describe the major patterns of biodiversity globally
- ability to identify key threatening processes that lead to the loss of biodiversity
- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques
- able to use principles of conservation biology to describe and evaluate conservation management options for a particular case

## MQ Ecology Reserve PoM

Due: **13 October**

Weighting: **30%**

The university is negotiating a Voluntary Conservation Agreement for an area of bushland between Talavera Road and the Lane Cove River. We will assess the area for its biodiversity values, threats including weeds & feral animals, fire management and public access and amenity. All data will be collected, presented and distributed during the second on-campus session (19-21 September). Using these data you will write a Plan of Management for the area. An example PoM will be provided on the iLearn website.

On successful completion you will be able to:

- ability to identify key threatening processes that lead to the loss of biodiversity
- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques
- able to use principles of conservation biology to describe and evaluate conservation management options for a particular case

## Participation

Due: **throughout semester**

Weighting: **5%**

You will be assessed for your participation in weekly lectures, 'The Conservation Piece' blog, in group fieldwork (contributing to field tasks) and in question time after student seminars and lectures.

On successful completion you will be able to:

- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques

## Final exam

Due: **Exam period**

Weighting: **30%**

The final examination is worth 30% of the unit's assessment. It will be 3 hours plus 10 min reading time. The examination will consist of a mixture of multiple choice, short answer and essay questions: examples will be provided in Lecture 26. There will be an emphasis placed on integration of material from lectures and practicals rather than on rote learning of facts and figures.

On successful completion you will be able to:

- ability to describe the major patterns of biodiversity globally
- ability to identify key threatening processes that lead to the loss of biodiversity
- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques
- able to use principles of conservation biology to describe and evaluate conservation management options for a particular case

## Delivery and Resources

### Unit web page

The unit web page can be accessed via the student portal (log in at <https://ilearn.mq.edu.au/login/MQ/>). There you will find unit information, resource material, links to interesting websites including career information, ECHO (formerly iLectures), announcements, forum and dialogue facilities, as well as links to Turnitin for submitting assessment tasks. You are encouraged to use the discussion & email facilities for communication among staff and students. Please also check the unit webpage regularly for announcements and additional resource material.

### RECOMMENDED TEXTS

There is no single text that covers the whole unit. Several general texts are recommended and are in the library or available free on-line:

Groom MJ, Meffe GK, Carroll CK. 2005. *Principles of Conservation Biology*, 3rd edition, Sinauer Associates.

Primack RB. 2010. *Essentials of Conservation Biology* 5<sup>th</sup> edition. Sinauer Associates.

Sodhi N and Ehrlich PR. (Eds.). 2010. *Conservation Biology for All*. Oxford University Press. (Available online at: [http://www.mongabay.com/conservation-biology-for-all.html\)/conservation-biology-for-all.html](http://www.mongabay.com/conservation-biology-for-all.html)/conservation-biology-for-all.html))

Lindenmayer D & Burgman M. 2005. *Practical Conservation Biology*. CSIRO.

Attiwill P. & Wilson B. (2006). *Ecology. An Australian Perspective*. 2<sup>nd</sup> edition, Oxford University Press.

### TECHNOLOGY USED AND REQUIRED

Students are expected to access all unit material through the iLearn unit webpage. Basic multimedia software (eg. Windows Media Player, Quicktime) will be needed to listen to recorded lectures. Students will be required to use internet resources for sourcing information and to use appropriate software, particularly Excel, for data analysis.

# Unit Schedule

## Lecture schedule

Date	L#	Lecture	Lecturer
	1	Introduction	Michelle Leishman
	2	Valuing & measuring biodiversity	Michelle Leishman
	4	Biodiversity & ecosystem function	Michelle Leishman
	5	Loss of biodiversity: extinction	Michelle Leishman
	6	The conservationist's toolbox	Michelle Leishman
	7	Vulnerability to extinction	Michelle Leishman
	8	Human population and habitat loss	Michelle Leishman
	9	Habitat fragmentation	Michelle Leishman
	10	Climate change	Michelle Leishman
	11	Invasive species	Michelle Leishman
	12	Invasive plants in Sydney vegetation	Michelle Leishman
	13	Over-exploitation, disease & pollution	Michelle Leishman
	14	Protected areas	Michelle Leishman
	15	Off-reserve conservation	Michelle Leishman
	16	Ecological restoration	Michelle Leishman
	17	Biodiversity & fire management	Michelle Leishman
	18	Species-level conservation	Michelle Leishman
	19	Seed banking	Peter Cuneo

	20	Introduction to conservation genetics	Richard Frankham
	21	Genetic m'ment of small popns	Richard Frankham
	22	Captive breeding & re-introduction	Richard Frankham
	23	Climate change adaptation & policy	Lesley Hughes
	24	Species translocation	Nola Hancock
	25	Legislation	Michelle Leishman
	26	Wrap-up	Michelle Leishman

## On-campus sessions

### Session 1: 23-24 August

Day 1 AM	Seminars
Day 1 PM	Assessment of threat status
Day 2 AM	Seminars
Day 2 PM	Ecological restoration in practice - LCNP site visit

### Session 2: 22-24 September

Day 1 AM	Overview of MQ Nature Reserve with Lane Cove National Park staff
Day 1 PM	Organise into groups, collate resources, field work
Day 2	Group field work
Day 2 AM	Group field work
Day 2 PM	Data presentation



## Learning and Teaching Activities

### Lectures

Lectures on theory and principles of conservation biology

### Practicals

Practicals include exercises in assessment of threat of extinction, population viability analysis, collecting data for conservation planning and management.

## 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/)

## 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

### Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

#### Learning outcome

- able to use principles of conservation biology to describe and evaluate conservation management options for a particular case

#### Assessment tasks

- Oral seminar
- Draft recovery plan
- MQ Ecology Reserve PoM

### Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able

to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

## **Learning outcomes**

- ability to describe the major patterns of biodiversity globally
- ability to identify key threatening processes that lead to the loss of biodiversity
- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques
- able to use principles of conservation biology to describe and evaluate conservation management options for a particular case

## **Assessment tasks**

- Oral seminar
- Blog
- Draft recovery plan
- MQ Ecology Reserve PoM
- Final exam

## **Critical, Analytical and Integrative Thinking**

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

## **Learning outcomes**

- ability to describe the major patterns of biodiversity globally
- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques
- able to use principles of conservation biology to describe and evaluate conservation management options for a particular case

## **Assessment tasks**

- Oral seminar
- Blog
- Draft recovery plan

- MQ Ecology Reserve PoM
- Final exam

## Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

### Learning outcomes

- ability to critically evaluate and synthesise diverse information sources on a conservation issue and communicate that understanding using a variety of techniques
- able to use principles of conservation biology to describe and evaluate conservation management options for a particular case

### Assessment tasks

- Draft recovery plan
- MQ Ecology Reserve PoM

## Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

### Assessment tasks

- Oral seminar
- Blog

## Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

## Assessment tasks

- Oral seminar
- Blog
- Participation

## Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

### Learning outcome

- ability to describe the major patterns of biodiversity globally

## Assessment tasks

- Draft recovery plan
- MQ Ecology Reserve PoM
- Participation

## Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

### Assessment tasks

- Draft recovery plan
- MQ Ecology Reserve PoM
- Participation

## Changes since First Published

Date	Description
24/06/2014	Dates updated