



BIOL3110

Evolutionary and Conservation Genetics

Session 1, Weekday attendance, North Ryde 2021

Archive (Pre-2022) - Department of Biological Sciences

Contents

General Information	2
Learning Outcomes	2
General Assessment Information	3
Assessment Tasks	5
Delivery and Resources	8
Policies and Procedures	9
Changes since First Published	11

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.

Notice

As part of [Phase 3 of our return to campus plan](#), most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to [timetable viewer](#). To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

General Information

Unit convenor and teaching staff

Adam Stow

adam.stow@mq.edu.au

Credit points

10

Prerequisites

130cp at 1000 level or above including BIOL2110 or BIOL206

Corequisites

Co-badged status

Unit description

Ongoing advances in molecular technology, statistics and bioinformatics have revolutionized our ability to gather and apply genetic information. This unit deals with the distribution of genetic variation among individuals, populations and species, and the relevance of such variation to evolutionary processes. Specific topics include selection and adaptive potential; mutation; inbreeding; population divergence; speciation; effective population size and extinction risk. Approaches to the study of genetic variation are explored at levels ranging from pedigree analysis to molecular genomics. Particular emphasis is placed on the importance of evolutionary genetics to the conservation, management and restoration of wild populations.

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:

ULO1: Explain why and how genetic factors have key importance in conservation biology

ULO2: Explain the importance of genetic diversity, and identify the phenomena that influence and maintain genetic diversity in populations

ULO3: Identify and apply appropriate statistical formulae to solve questions in conservation and evolutionary genetics

ULO4: Apply conservation genetic theory in order to propose management strategies for both wild and captive populations

ULO5: Synthesise and evaluate information on contemporary topics in conservation and evolutionary genetics

General Assessment Information

All assignments must be submitted via the TURNITIN links embedded in the unit's **iLearn** site. A signed and scanned coversheet must be included with the submission or otherwise emailed to the unit convener.

TURNITIN is a powerful online tool for detecting plagiarism. It compares the text of submitted documents with the work of current classmates, past students, published material in books, journals and across the internet. As part of our commitment to academic honesty at Macquarie, you are required to submit your assignments to TURNITIN. You will be able to do so via links in iLearn (embedded in the weeks when each task is due; e.g., Week 3 for Assignment 1).

Due dates, extensions, penalties and special consideration

Overdue assignments will attract a penalty at the rate of **5 % of the total mark allocated for the assignment per day past the due date**. Weekend days are included in this calculation. The penalty will be capped at 75 %, which means that once your submission is more than 15 days overdue you can earn up to a maximum of 25 % of the assessment grade. The date and time of your submission will be taken as registered by TURNITIN.

Deadlines for assessments are **not negotiable** except under circumstances when you have experienced a serious and unavoidable disruption. In such instances, you should formally lodge a disruption to studies notification via ASK@MQ. University policy and procedure in regard to disruptions is given in the links below, but please note in particular:

1. To be eligible for special consideration, you must notify the University of a *serious and unavoidable* disruption **within five (5) working days** of the commencement of the disruption;
2. Such requests must be lodged for the **specific assessment task** for which you

experienced disruption. Special consideration cannot be granted retrospectively (i.e., beyond the 5-day window of each assessment due-date);

3. Unit staff will NOT be held responsible for assessing special consideration **unless a disruption notification is formally lodged** via ASK@MQ.

Grading & return of assessment tasks

Assessments for assignments and mid-semester tests will be communicated in class to internal students and electronically to external students, along with feedback (specific and general) via text, structured rubrics and orally. A guide to dates for return of grades is provided above – see ‘assessment at a glance’.

One disclaimer: Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Ratified results will be sent to your student email address and will be made available in eStudent.

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

Assessment policy:

http://mq.edu.au/policy/docs/assessment/policy_2016.html.

Grade Appeal Policy:

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

Complaint Management Procedure for Students and Members of the Public:

http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (*This replaces the former Special Consideration Policy*):

http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Other policies can be found in the Learning and Teaching Category of Policy Central.

Student Code of Conduct

As a Macquarie University student, you have a responsibility to be familiar with (and adhere to) the Student Code of Conduct, available at: https://students.mq.edu.au/support/student_conduct/

Assessment Tasks

Name	Weighting	Hurdle	Due
Commentary Article	5%	Yes	Week 3
Seminar	15%	No	Week 9
Problem Tests	30%	No	Week 6 and Week 13
Final Examination	30%	No	Examination Period
Scientific Report	20%	No	Week 11

Commentary Article

Assessment Type ¹: Professional writing

Indicative Time on Task ²: 6 hours

Due: **Week 3**

Weighting: **5%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

You are required to write a short commentary article on a published paper dealing with genetic variation and conservation. This will require a short literature search to identify a relevant paper from among the leading journals in conservation genetics (incl. *Science*, *Nature*, *PNAS*, *PLOS biology*, *Evolution*, *Molecular Ecology*, *Conservation Biology*, *Conservation Genetics* + many others). You should then familiarize yourself with the paper and its methodologies and write a commentary in the style of those appearing in the 'Perspectives' section of the journal *Science*. This is an early assessment task, with assessment criteria weighted for participation and genuine effort (given the early stage of unit material delivery). You will submit this assignment via TURNITIN.

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- Synthesise and evaluate information on contemporary topics in conservation and evolutionary genetics

Seminar

Assessment Type ¹: Presentation

Indicative Time on Task ²: 8 hours

Due: **Week 9**

Weighting: **15%**

You are required to give an oral presentation using Powerpoint, based on one to several topical research paper(s) in conservation/ecological genetics. Conference presentations are a primary means of communicating knowledge in science, and these sessions will be conducted in the manner of a formal scientific conference. Time limits will be strictly enforced, and will constitute part of the assessment criteria for this task.

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Problem Tests

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 16 hours

Due: **Week 6 and Week 13**

Weighting: **30%**

Students will submit two mathematical problem sets based tutorial work.

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Final Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 38 hours

Due: **Examination Period**

Weighting: **30%**

You will be tested on your knowledge of course content, including information from all lectures and tutorials, plus prescribed reading from the textbook (Frankham *et al.*) and other sources. No mathematical problem solving will be required in this examination. Check online (www.mq.edu.au) for scheduling updates towards the end of the teaching session.

On successful completion you will be able to:

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Scientific Report

Assessment Type ¹: Report

Indicative Time on Task ²: 34 hours

Due: **Week 11**

Weighting: **20%**

You are required to prepare a scientific manuscript based on the data analysed in the computer lab tutorial. Your manuscript should be structured according to the author instructions for 'original articles' in the journal *Evolution*:

<http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291558-5646/homepage/ForAuthors.html>

This will be submitted via TURNITIN. Further information, discussion and resources (including a marking rubric) will be provided prior to and during the computer lab tutorial.

On successful completion you will be able to:

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- Identify and apply appropriate statistical formulae to solve questions in conservation and evolutionary genetics
- Apply conservation genetic theory in order to propose management strategies for both wild and captive populations
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¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Lectures will be provided online via zoom, tutorials will be offered either via face to face

or online via zoom

Unit materials will be available on iLearn™ (<https://ilearn.mq.edu.au>). This is the primary conduit for communication in this subject. Use it for:

- Regularly checking subject announcements and communications;
- Downloading lecture, laboratory and reference materials;
- Uploading Assignments to TURNITIN via embedded links;
- Checking your grades.

Your user name is your student number, and your password is your myMQ student portal password.

If you are having problems logging on, please contact Student IT Help, Phone: (02) 9850 4357 (in Sydney) or 1 800 674 357 (outside Sydney).

If you are having trouble accessing your online unit due to a disability or health condition, please go to the Student Enquiry Services website at <http://www.student.mq.edu.au/ses/> for information on how to get assistance.

The content of this unit is closely linked to **Frankham R, Ballou JD and Briscoe DA (2010) *Introduction to Conservation Genetics 2nd edition*. Cambridge University Press**. This textbook is required reading for Biol334 students. The book was written by Emeritus Prof Richard Frankham and Prof Dave Briscoe, of Macquarie Biological Sciences, together with Dr Jon Ballou (Head of the Department of Conservation Biology at the Smithsonian's National Zoological Park). There is only a single copy of this book on special reserve at the university library; therefore we strongly advise that each student purchase their own copy.

Additional recommended texts (available in the University library) include:

Avise J (2000) *Phylogeography: The History and Formation of Species*, Harvard University Press.

Avise JC (2004) *Molecular Markers, Natural History and Evolution 2nd Edition*. Sinauer Associates, Inc.

Balkenhol N, Cushman S, Storfer A, Waits L (2015) *Landscape genetics: Concepts, Methods, Applications 1st Edition*. Wiley-Blackwell.

DeSalle R et al. (2002) *Molecular Systematics and Evolution: Theory and Practice*. Birkhäuser Basel

Hillis D et al. (1996) *Molecular Systematics 2nd Edition*. Sinauer Associates, Inc.

Additional readings and course materials will be regularly provided via the unit's iLearn site.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to

Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies](https://students.mq.edu.au/support/study/policies) (<https://students.mq.edu.au/support/study/policies>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central](https://policies.mq.edu.au) (<https://policies.mq.edu.au>) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@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) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

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

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

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

Changes since First Published

Date	Description
03/02/2021	SC linkage