



BIOL369

Vertebrate Evolution

S1 External 2019

Dept of Biological Sciences

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General Information

Unit convenor and teaching staff

Culum Brown

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Kate Barry

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Credit points

3

Prerequisites

(39cp at 100 level or above) including BIOL262 or BIOL208 or BIOL228 or BIOL229

Corequisites

Co-badged status

Unit description

Evolution is a dynamic process that has occurred over many millions of years (deep evolution) or in recent times (contemporary evolution). This unit considers the major events in vertebrate evolution: invertebrate chordate to vertebrate; jawless to jawed; water to land; ectothermy to endothermy; and land to air. The newly emerging synthesis of evolutionary and developmental biology is having considerable impact on current vertebrate evolutionary theory, as are molecular techniques for constructing phylogenics. These topics are discussed in relation to deep and contemporary evolution of vertebrate groups. Lecture topics also include current aspects such developments in evolution of vertebrate behaviours, macro-evolution, and human evolution. The practical work focuses on phylogenics, and comparative anatomy and morphology of representative vertebrate groups, to reinforce lecture themes.

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:

Apply taxonomic nomenclature to vertebrate groups

Relate anatomical traits to the diversity of key vertebrate species

Associate the major steps in vertebrate evolution to body form and physiological function

Evaluate different methods for determining evolutionary relationships

Classify vertebrate behaviours to functional roles and interactions at community levels
Communicate scientific information relevant to vertebrate evolution in oral and in written format

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Weekly activities</u>	10%	No	Each Monday
<u>Science Communication</u>	15%	No	01/04/2019
<u>Prac Notes</u>	15%	No	03/06/2017
<u>Prac Report</u>	20%	No	27/05/17
<u>Exam</u>	40%	No	TBA

Weekly activities

Due: **Each Monday**

Weighting: **10%**

You will demonstrate your understanding of important concepts and current themes in Vertebrate evolution

On successful completion you will be able to:

- Apply taxonomic nomenclature to vertebrate groups
- Relate anatomical traits to the diversity of key vertebrate species
- Associate the major steps in vertebrate evolution to body form and physiological function
- Evaluate different methods for determining evolutionary relationships
- Classify vertebrate behaviours to functional roles and interactions at community levels

Science Communication

Due: **01/04/2019**

Weighting: **15%**

Australia is a country of extremes and many of our animals are superbly adapted to cope. In combination with a workshop presented at the Zoo, students will pick an Australian native animal to study and highlight the key adaptations that have enabled that animal to live in the harsh Australian environment. Each student will put together an science communication project to present their findings to the class.

On successful completion you will be able to:

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- Communicate scientific information relevant to vertebrate evolution in oral and in written format

Prac Notes

Due: **03/06/2017**

Weighting: **15%**

As a good scientist it is paramount that you learn to keep an accurate record of your experiments and activities. This usually takes the form of a lab book. Throughout this course you will be conducting a series of lab exercises which involves examination of a LOT of different material. These lab notes should not only consolidate your understanding of each prac but also provide a good resource for review. (I still have my lab notes from my Vertebrate Evolution course from 1993!)

It is expected that you will create a word document in which you will paste pictures, diagrams and notes that you take during the practical sessions. The lab “book” will be submitted via iLearn for review after prac 5 and prac 10, but will be reviewed during each prac session by your tutors.

You will submit your prac notes for grading for pracs 1-5 on the 15th April, and 6-10 on the 3rd June.

On successful completion you will be able to:

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- Associate the major steps in vertebrate evolution to body form and physiological function
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- Classify vertebrate behaviours to functional roles and interactions at community levels

Prac Report

Due: **27/05/17**

Weighting: **20%**

The practical report requires your utmost attention during both the ‘rat dissection’ and ‘wildlife dissection’ practicals. As a class, we will be examining the relationship between an organism’s internal morphology and its ecology. The work will culminate in you producing a scientific paper that places these findings in an evolutionary context.

Finer details on the details of the practical exercises and the report to be submitted will be provided on iLearn.

On successful completion you will be able to:

- Apply taxonomic nomenclature to vertebrate groups
- Relate anatomical traits to the diversity of key vertebrate species
- Associate the major steps in vertebrate evolution to body form and physiological function
- Evaluate different methods for determining evolutionary relationships
- Classify vertebrate behaviours to functional roles and interactions at community levels
- Communicate scientific information relevant to vertebrate evolution in oral and in written format

Exam

Due: **TBA**

Weighting: **40%**

The final exam will cover both lecture and practical material

On successful completion you will be able to:

- Apply taxonomic nomenclature to vertebrate groups
- Relate anatomical traits to the diversity of key vertebrate species
- Associate the major steps in vertebrate evolution to body form and physiological function
- Evaluate different methods for determining evolutionary relationships
- Classify vertebrate behaviours to functional roles and interactions at community levels

Delivery and Resources

Lecture materials and iLectures will be available through iLearn

iLearn is a web-based computer mediated communication package and can be accessed by most web browsers from inside or outside the University. iLearn and email will be the principle method of communication in this subject.

We expect you to use iLearn for:

- Regularly checking subject announcements
- Downloading lecture materials
- Downloading laboratory materials
- Downloading reference materials
- Checking your grades
- Conversing with your student community

How do you log in? The URL for the iLearn is: <https://ilearn.mq.edu.au/>. You will need to log in to iLearn each time you use it. Your user name is your student number and the password your oneID. For further details go to http://mq.edu.au/iLearn/student_info/index.htm. If you are having

trouble accessing your online unit due to a disability or health condition, please go to the Student Services Website at <http://sss.mq.edu.au/equity/about> for information on how to get assistance. If you cannot log in after ensuring you have entered your username and password correctly, you should contact Student IT Help, Phone: (02) 9850 4357 (in Sydney) or 1 800 063 191 (outside Sydney).

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

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

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/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 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

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.

Graduate Capabilities

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:

Learning outcomes

- Evaluate different methods for determining evolutionary relationships
- Classify vertebrate behaviours to functional roles and interactions at community levels
- Communicate scientific information relevant to vertebrate evolution in oral and in written format

Assessment tasks

- Weekly activities
- Science Communication

- Prac Report

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

- Relate anatomical traits to the diversity of key vertebrate species
- Associate the major steps in vertebrate evolution to body form and physiological function
- Evaluate different methods for determining evolutionary relationships

Assessment tasks

- Weekly activities
- Science Communication
- Prac Notes
- Prac Report
- 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

- Apply taxonomic nomenclature to vertebrate groups
- Relate anatomical traits to the diversity of key vertebrate species
- Associate the major steps in vertebrate evolution to body form and physiological function
- Evaluate different methods for determining evolutionary relationships
- Classify vertebrate behaviours to functional roles and interactions at community levels
- Communicate scientific information relevant to vertebrate evolution in oral and in written format

Assessment tasks

- Weekly activities
- Science Communication
- Prac Notes
- Prac Report

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 outcome

- Classify vertebrate behaviours to functional roles and interactions at community levels

Assessment tasks

- Weekly activities
- Science Communication
- Prac Notes
- Prac Report
- Exam

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:

Learning outcomes

- Apply taxonomic nomenclature to vertebrate groups
- Evaluate different methods for determining evolutionary relationships
- Communicate scientific information relevant to vertebrate evolution in oral and in written format

Assessment tasks

- Weekly activities
- Science Communication
- Prac Notes
- Prac Report
- Exam