

Module code: MOD009914	Version: 2 Date Amended: 11/Apr/2025
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1. Module Title
Conservation Genetics

2a. Module Leader
Steven Allain

2b. School
Writtle School of Agriculture, Animal and Environmental Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
7

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:			

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

In this module, you'll explore the concept of genetic diversity in livestock and zoo animal populations. You'll learn various methods for measuring genetic diversity using population genetic theory and molecular data and you'll examine the scientific principles underlying traditional animal breeding and population genetics.

Throughout the module, you'll see how these key concepts can be applied to manage genetic variation in commercial livestock, companion animals and zoo populations. You'll have the opportunity to investigate strategies for managing small populations with limited genetic resources and to formulate practical solutions to try and manage these populations. In addition to lectures, you'll also use weekly journal clubs to highlight key successes in implementing these strategies for monitoring genetic populations.

You'll develop skills in genetic analysis through an examination of the statistical approaches to the study of population genetics as well as through the use of online tools and databases such as GenBank. Practical molecular biology skills will also be developed through hands-on techniques including PCR and gel electrophoresis.

Finally, you'll develop advanced literature-based research skills through the exploration and synthesis of peer reviewed scientific literature, while adapting your communication style for different audiences.

6b. Outline Content

Measuring genetic diversity - to the role of genetics in conserving genetic diversity and effective population sizes and minimum viable populations.

Molecular Genetics - Introduction of molecular genetic techniques and how these tools can be used in breeding and conservation systems.

Application of these genetic principles - to current zoo and livestock populations. Identify potential breeding strategies to increase genetic diversity and effective population size, minimise in-breeding. Reflecting on practical implications of conservation schemes on stakeholders.

6c. Key Texts/Literature

The reading list to support this module is available at: <https://readinglists.aru.ac.uk/>

6d. Specialist Learning Resources

None

7. Learning Outcomes (threshold standards)		
No.	Type	On successful completion of this module the student will be expected to be able to:
1	Knowledge and Understanding	Apply key population and quantitative genetic principles to conservation situations.
2	Knowledge and Understanding	Critically evaluate the impacts of management and breeding decisions to the population genetics of endangered groups.
3	Intellectual, practical, affective and transferrable skills	Communicate complex scientific concepts clearly to a general audience.

8a. Module Occurrence to which this MDF Refers				
Year	Occurrence	Period	Location	Mode of Delivery
2026/7	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	Hours	Learning Outcomes	Details of Duration, frequency and other comments
Lectures	33	1-3	A variety of activities including: Presentation of key theories and principles, Applications of those theories to different situations. Class discussion of research papers. Discussion of management practices and stakeholder roles.
Other teacher managed learning	6	1-3	A variety of activities including: Presentation of key theories and principles, Applications of those theories to different situations. Class discussion of research papers. Discussion of management practices and stakeholder roles.
Student managed learning	111	1-3	Self Directed Learning
TOTAL:	150		

9. Assessment for the above Module Occurrence

The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1-2	70 (%)	Fine Grade	40 (%)

Report (2250 Words) - Student will select an endangered taxon of their choice, they will then write a scientific report on the conservation genetics of that taxon. The report will cover two areas. First students will summarise the current state of knowledge regarding the conservation genetics of their chose taxon (worth 50% of the assessment). Second, students will critically assess the current genetic management programs/practice for the taxon and make future management recommendations (worth 50% of the assignment).

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	3	30 (%)	Fine Grade	40 (%)

Article (750 Words) - Students will translate their scientific report into a popular science article that is suitable for a general audience. It will be in the style of a science magazine article or a blog.

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:

- (a) achieve the qualifying mark for each element of fine graded assessment as specified above**
- (b) pass any pass/fail elements**

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]