

BL3309 Ecosystems and Conservation

(BL3309 online module handbook version 89)

Credits: 20

Semester: 2

Module Organiser

Prof Will Cresswell

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Pre-requisite Modules:

Before taking this module you must pass BL2307 and (pass BL2303 or pass BL2304 or pass BL2308)

Anti-requisite Modules:

Post-requisite Modules:

Additional Module Information:

[Please check MMS regularly for additional module information](#)



This module will examine how ecosystems function and how they provide services for humans: information which is essential for ecologists, conservationists and land managers. The module will consider examples of natural systems being altered by man to demonstrate how ecosystems function and the consequences of anthropogenic change. Disturbance and regulation in ecosystems, atmospheric and hydrological regulation (including the greenhouse effect and acidification), soil ecology, conservation and management of natural resources, agricultural and grazed ecosystems (including GMOs), urban ecosystems and aspects of sustainable development will also be discussed.

[BL3309View content for BL3309 \(2023/4\) in the Module Management System \(MMS\)](#)

[View the current Biology Online Module Catalogue for BL3309](#)

[BL3309View BL3309 \(2023/4\) in the University of St Andrews Module Catalogue](#)

Contents:

- Cover
- Contents
- Timetable
- Reading List
- Assessment
- Who To Ask
- Contributing Staff
- Learning Outcomes
- Acquired Skills
- Policies

BL3309: Timetable

Legend (not all modules have every event type):

lecture	tutorial	workshop	practical	other
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Semester 2: Week 1

DATE & TIME	VENUE	STAFF	EVENT
Monday 15-01-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L1: Ecosystems services and biodiversity as a resource 2023-4_BL3309_L1
Tuesday 16-01-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L2: Stability, disturbance and regulation in ecosystems 2023-4_BL3309_L2
Wednesday 17-01-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L3: Agricultural ecosystems 2023-4_BL3309_L3
Wednesday 17-01-2024 14:00 to 17:00	Bute Building Bute Computer Lab	Prof Will Cresswell -	Practical P1: Ecological modeling 1 2023-4_BL3309_P1 Analysis workshop
Friday 19-01-2024 12:00 to 13:00	Dyers Brae Seminar Room	Prof Will Cresswell -	Tutorial T1: Continuous assessment 1 troubleshooting 2023-4_BL3309_T1 Optional drop in tutorial

Semester 2: Week 2

DATE & TIME	VENUE	STAFF	EVENT
Monday 22-01-2024 10:00 to 11:00	Bute Building LTA	Dr Verena Dietrich-Bischoff -	Lecture L4: Soils 2023-4_BL3309_L4
Monday 22-01-2024 14:00 to 16:00	Dyers Brae Seminar Room	Prof Will Cresswell -	Tutorial T2: Continuous assessment 1 troubleshooting 2023-4_BL3309_T2 Optional drop in tutorial
Tuesday 23-01-2024 10:00 to 11:00	Bute Building LTA	Dr Verena Dietrich-Bischoff -	Lecture L5: Acidification 2023-4_BL3309_L5
Wednesday 24-01-2024 10:00 to 11:00	Bute Building LTA	Dr Verena Dietrich-Bischoff -	Lecture L6: Pesticides 2023-4_BL3309_L6

Semester 2: Week 3

DATE & TIME	VENUE	STAFF	EVENT
Monday 29-01-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L7: Grazing and domestic animals in ecosystems 2023-4_BL3309_L7
Tuesday 30-01-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L8: Biological control 2023-4_BL3309_L8
Tuesday 30-01-2024 16:00 to 17:00	Dyers Brae Seminar Room	Prof Will Cresswell -	Tutorial T3: Continuous assessment 1 troubleshooting 2023-4_BL3309_T3 Optional drop in tutorial
Wednesday 31-01-2024 10:00 to 11:00	Bute Building LTA	Dr Verena Dietrich-Bischoff -	Lecture L9: Climate change 1 2023-4_BL3309_L9
Wednesday 31-01-2024 15:00 to 16:00	Dyers Brae Seminar Room	Prof Will Cresswell -	Tutorial T4: Continuous assessment 1 troubleshooting 2023-4_BL3309_T4 Optional drop in tutorial

Semester 2: Week 4

DATE & TIME	VENUE	STAFF	EVENT
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Monday 05-02-2024 10:00 to 11:00	Bute Building LTA	Dr Verena Dietrich-Bischoff -	Lecture L10: Climate change 2 2023-4_BL3309_L10
Tuesday 06-02-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L11: Extractive exploitation 2023-4_BL3309_L11
Wednesday 07-02-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L12: Recreation, ecotourism and culture 2023-4_BL3309_L12 Student briefings

Semester 2: Week 5

DATE & TIME	VENUE	STAFF	EVENT
Monday 12-02-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L13: Urban ecosystems 1 2023-4_BL3309_L13
Tuesday 13-02-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L14: Urban ecosystems 2 2023-4_BL3309_L14
Wednesday 14-02-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L15: FEEDBACK on continuous assessment 1 2023-4_BL3309_L15
Wednesday 14-02-2024 14:00 to 17:00	Bute Building Bute Computer Lab	Prof Will Cresswell -	Practical P2: Ecological modeling 2 2023-4_BL3309_P2 Computer analysis practical

Semester 2: Week 6

DATE & TIME	VENUE	STAFF	EVENT
Monday 19-02-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L16: Guest lecture 2023-4_BL3309_L16
Monday 19-02-2024 14:00 to 16:00	Dyers Brae Seminar Room	Prof Will Cresswell -	Tutorial T5: Continuous assessment 2 troubleshooting 2023-4_BL3309_T5 Optional drop in tutorial
Tuesday 20-02-2024 10:00 to 11:00	Bute Building LTA	Prof Simon Northridge -	Workshop W1: Class conservation hot topic priorities discussion 2023-4_BL3309_W1
Wednesday 21-02-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Workshop W2: Class conservation hot topic priorities discussion part 2 2023-4_BL3309_W2
Wednesday 21-02-2024 14:00 to 15:00	Dyers Brae Seminar Room	Prof Will Cresswell -	Tutorial T6: Continuous assessment 2 troubleshooting 2023-4_BL3309_T6 Optional drop in tutorial
Thursday 22-02-2024 16:00 to 17:00	Dyers Brae Seminar Room	Prof Will Cresswell -	Tutorial T7: Continuous assessment 2 troubleshooting 2023-4_BL3309_T7 Optional drop in session

Spring Break: 26-Feb-2024 to 01-Mar-2024

Semester 2: Week 7

DATE & TIME	VENUE	STAFF	EVENT
Monday 04-03-2024 10:00 to 11:00	Bute Building LTA	-	Lecture L17: Guest Lecturer 2 2023-4_BL3309_L17
Monday 04-03-2024 14:00 to 15:00	Dyers Brae Seminar Room	-	Tutorial T8: Continuous assessment 1 troubleshooting 2023-4_BL3309_T8 Optional drop in tutorial
Tuesday 05-03-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Workshop W3: Class hot topic preparation 2023-4_BL3309_W3

Wednesday 06-03-2024 10:00 to 11:00	Bute Building LTA	Dr Miguel Barbosa -	Lecture L18: Conservation in a marine context: marine protected areas <small>2023-4_BL3309_L18</small> Student briefings
Wednesday 06-03-2024 14:00 to 15:00	Dyers Brae Seminar Room	-	Tutorial T9: Continuous assessment 1 troubleshooting <small>2023-4_BL3309_T9</small> Optional drop in tutorial

Semester 2: Week 8

DATE & TIME	VENUE	STAFF	EVENT
Monday 11-03-2024 10:00 to 11:00	Bute Building LTA	Prof Simon Northridge -	Lecture L19: The causes of extinction <small>2023-4_BL3309_L19</small>
Tuesday 12-03-2024 10:00 to 11:00	Bute Building LTA	Prof Simon Northridge -	Lecture L20: Evaluating the risk of extinction <small>2023-4_BL3309_L20</small>
Wednesday 13-03-2024 10:00 to 11:00	Bute Building LTA	Prof Simon Northridge -	Lecture L21: The metapopulation concept and area based conservation <small>2023-4_BL3309_L21</small>

Semester 2: Week 9

DATE & TIME	VENUE	STAFF	EVENT
Monday 18-03-2024 10:00 to 11:00	Bute Building LTA	Prof Simon Northridge -	Lecture L22: Harvesting and managing wild populations <small>2023-4_BL3309_L22</small>
Tuesday 19-03-2024 10:00 to 11:00	Bute Building LTA	Dr Miguel Barbosa -	Lecture L23: Ecological economics - valuing Biodiversity and Ecosystem Services <small>2023-4_BL3309_L23</small>
Wednesday 20-03-2024 10:00 to 11:00	Bute Building LTA	Dr Miguel Barbosa -	Lecture L24: Conservation education <small>2023-4_BL3309_L24</small>

Semester 2: Week 10

DATE & TIME	VENUE	STAFF	EVENT
Monday 25-03-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L25: Species and habitat conservation <small>2023-4_BL3309_L25</small>
Tuesday 26-03-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L26: Sustainable development 1 <small>2023-4_BL3309_L26</small>
Wednesday 27-03-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L27: Sustainable development 2 <small>2023-4_BL3309_L27</small>

Semester 2: Week 11

DATE & TIME	VENUE	STAFF	EVENT
Monday 01-04-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L28: FEEDBACK on continuous assessment 2 <small>2023-4_BL3309_L28</small>
Tuesday 02-04-2024 10:00 to 11:00	Bute Building LTA	Prof Will Cresswell -	Lecture L29: Optional Revision and exam question session <small>2023-4_BL3309_L29</small>
Friday 05-04-2024 10:00 to 13:00	Bute Building LTD	Prof Will Cresswell -	Workshop W4: Conservation planning presentations <small>2023-4_BL3309_W4</small> Note Bute Lecture Theatre D

BL3309: Reading List

[BL3309Click for BL3309 reading list](#)

BL3309: Assessment

3-hour Written Examination = 50%, Coursework = 50%

[BL3309View coursework assessment details for BL3309 \(2023/4\) in MMS](#)

The following related information applies to all Biology modules:

School of Biology Marking Criteria:	See JH booklet info (st-andrews.ac.uk)
Late submission of continuous assessment work:	All late submissions of coursework that do not require electronic submission should be made via the Biology Teaching Office, Level 2, BMS Building, North Haugh.
Exam details:	See School of Biology UG Handbook JH booklet info (st-andrews.ac.uk) : All Biology exams will be conducted online for 2022-23.
Exam timetable:	See Timetables - Exams - University of St Andrews (st-andrews.ac.uk)
Expected attendance:	See JH booklet info (st-andrews.ac.uk) for detailed attendance requirements.
Good Academic Practice & Avoiding Academic Misconduct:	See JH booklet info (st-andrews.ac.uk)
University Student Handbook:	University Student Handbook
School and University regulations in the School and University Undergraduate Handbook relating to absence reporting, penalties and rules for late submission of work, extensions for coursework, return of coursework, S-coding, good academic practice and Academic Alerts.:	JH booklet info (st-andrews.ac.uk) University Student Handbook

Who to ask

(Information in this section applies to all Biology Modules)

Before contacting staff, students should check the content of the Biology Undergraduate Handbook, the module handbook and specific task instructions.

Questions about

General teaching matters
Rescheduled or cancelled events
Lecture or practical content
Completing assessed practical assignments
Completing assessments
Marking on continuous assessment
Marking on exams
Rearranging practical days
Absence and/or extensions
Difficulties with academic progress which impact more than one module:

Overall performance, progress or future directions:
Disability:
For advice and support on any issue e.g. academic, financial, international, personal or health matters, or if you are unsure of who to go to for help:

University assistance with urgent matters out of office hours:

Contact

Biology Teaching Office (bioteach@st-andrews.ac.uk)
Check your University email
The lecturer who presented the material
The lecturer who set the assignment
Module Organiser (Prof Will Cresswell wrlc@st-andrews.ac.uk)
The Demonstrator or Module Organiser (Prof Will Cresswell wrlc@st-andrews.ac.uk)
Module Organiser (Prof Will Cresswell wrlc@st-andrews.ac.uk)
Module Organiser (Prof Will Cresswell wrlc@st-andrews.ac.uk)
Module Organiser (Prof Will Cresswell wrlc@st-andrews.ac.uk) **and** the Biology Teaching Office (bioteach@st-andrews.ac.uk)
Year Coordinator
See School of Biology UG Handbook for list: [JH booklet info \(st-andrews.ac.uk\)](http://www.st-andrews.ac.uk/jh-booklet-info)
Advisor of Studies

Disability Coordinator (biodisabilities@st-andrews.ac.uk)
Advice & Support Centre
Address: 79 North Street, St Andrews
Email: theasc@st-andrews.ac.uk
Web: <https://www.standrews.ac.uk/ask-a-question/>
Tel: 01334 462020
Tel: 01334 476161
Web: <https://www.st-andrews.ac.uk/students/advice/counselling/incrisis/>

Biology Teaching Office:

We are happy to hear from you about teaching matters. The School of Biology Teaching Office is open Monday to Friday 09.00 - 13.00 and 14.00 - 17.00. School of Biology staff will respond to your emails during these hours. Our team will provide a response to you within three working days.

Biology Teaching Office (Level 2), University of St Andrews, Biomolecular Sciences Building, North Haugh, St Andrews, Fife KY16 9ST

Email: bioteach@st-andrews.ac.uk

Tel: 01334 46 3602 or 3566

BL3309: Contributing Staff

Prof Will Cresswell
(Module Organiser)

Professor of Biology

wrlc@st-andrews.ac.uk

Dr Miguel Barbosa

Lecturer in Marine Biology

mb334@st-andrews.ac.uk

Prof Will Cresswell
(Module Organiser)

Professor of Biology

wrlc@st-andrews.ac.uk

Dr Verena Dietrich-Bischoff

Lecturer (Education-Focused)

vdb@st-andrews.ac.uk

Prof Simon Northridge

Head of School

spn1@st-andrews.ac.uk

BL3309: Learning Outcomes

Students completing module BL3309 successfully should be able to:

- List and explain the functional basis of the types of relationships between organisms and abiotic factors
- Describe how diversity arises from the physical processes that limit this
- Describe how ecosystem functions result from how other organisms ameliorate or intensify limiting abiotic conditions.
- Give specific detailed examples of how relationships between organisms at an ecosystem level, and ecosystem processes, arise from combinations of abiotic and biotic factors and how organisms and communities themselves then affect abiotic factors.
- Understand the concept of ecosystem services
- Understand how humans are affecting ecosystem functions and processes and so ecosystem services.
- Give specific detailed examples of how humans can change and manage ecosystem services.
- Appreciate that how humans affect ecosystem functions and processes is fundamental to future quality of life, and how conservation, urban planning and sustainable development can lead to positive solutions.
- Analyse and interpret complex ecological data sets typical of environmental monitoring.

BL3309: Acquired Skills

Practical Skills

- Field sampling methods (Vertebrates)
- Sustainability related practical skills

Transferable Skills

- Group discussion - leading
- Group discussion - participating
- Leading short activity
- Short individual presentation on given topic (up to 15 min)
- Short informal presentation (using PowerPoint or not)
- "Full" practical write-up (Intro, Methods, Results, Discussion)
- Critically evaluating sources/information
- Finding information on the web
- Finding literature
- Referencing
- Searching databases
- Sourcing figures/tables
- Computer programming
- Generating questions
- Impact considerations
- Peer assessment
- Reflective analysis
- Problem-solving questions
- ANOVA/Kruskal-Wallis test
- Biodiversity analysis
- Chi-square test
- Data analysis
- Data analysis (depending on project)
- Data presentation
- Deal with outliers
- Decimal places
- Descriptive statistics
- Distinguish different types of data
- Draw a line of best fit
- Generalised Linear Models
- Handling big data
- Interpolation
- Linear regression
- Logarithms
- Non-linear fit
- Pearson/Spearman rank correlation
- Produce graphs/figures
- Produce tables
- Shapiro-Wilk test for normality
- SI units
- Significant figures
- Survival analysis

- t-test/Wilcoxon test
- Two-way ANOVA
- Use Excel
- Use R or R Studio
- Sustainability Related Skills
- Managing a team
- Organising group work
- Working in pairs/small groups

Policies

(Information in this section applies to all Biology Modules)

- The procedures and regulations followed by the School of Biology are outlined in the [University Handbook](#) and in the School of Biology UG handbook [JH booklet info \(st-andrews.ac.uk\)](#)
- All coursework associated with the module must be completed and submitted by its due date.
- Specific School regulations relating to absence reporting, penalties and rules for late submission of work, extensions for coursework, return of coursework, S-coding, Good Academic Practice and Academic Alert are stated in the School of Biology UG handbook [JH booklet info \(st-andrews.ac.uk\)](#) and students are required to carefully read these regulations.
- Students are also referred to the University Handbook, available at: <http://www.st-andrews.ac.uk/studenthandbook/>