

Programme Specification (PG)

Awarding body / institution:	Queen Mary University of London
Teaching institution:	Queen Mary University of London / Royal Botanic Gardens, Kew
Name of final award and programme title:	Master of Science (MSc) Biodiversity and Conservation
Name of interim award(s):	Diploma in Biodiversity and Conservation
Duration of study / period of registration:	12 month (FT)
Queen Mary programme code(s):	C1R2
QAA Benchmark Group:	Biosciences (but no subject benchmark is available at Masters level)
FHEQ Level of Award:	Level 7
Programme accredited by:	N/A
Date Programme Specification approved:	
Responsible School / Institute:	School of Biological & Chemical Sciences

Schools / Institutes which will also be involved in teaching part of the programme:

School of Biological & Chemical Sciences

Collaborative institution(s) / organisation(s) involved in delivering the programme:

Royal Botanic Gardens, Kew

Programme outline

This programme explores the global problem of biodiversity loss, in animals, plants and fungi. It studies freshwater, marine and terrestrial systems. It examines approaches to monitor, survey, study, manage and restore our biodiversity and the natural capital it generates. It directly addresses key global and British challenges to maintain and indeed enhance biodiversity in the face of unprecedented pressure from growing climate change, intense farming and increased industrialisation. It prepares students for the conservation and management of the natural world, a problem of urgent importance politically and socially. This MSc is directly relevant to biodiversity and conservation goals in both a national and international context.

This course delivers skills in biodiversity and conservation via a thorough grounding in aquatic (freshwater and marine) and terrestrial ecology as well as molecular systematics, evolutionary biology, and conservation policy, theory and practice. Students will be taught by world-leading experts, internationally recognised for cutting edge research in plant and animal sciences, applying new technologies to answer fundamental questions about biodiversity on the planet, how it evolved and how we can best conserve and even enhance it.

Programme highlights:

- New cross-disciplinary course delivered by experts in plant and animal science and conservation.
- A unique hands-on MSc course combining plant and animal biodiversity and conservation using applied lab and field-based

approaches.

- Use of the world-class collections and resources at the Royal Botanic Gardens, Kew - both in the UK and abroad, as well as access to over 350 Kew Scientists.
- Breadth of expertise across Queen Mary University of London including environmental, evolutionary, ecology and conservation Sciences with Scientists working across the planet to improve biodiversity.
- Student field trips to a biodiversity hotspot, Cabo Verde, Madagascar and Borneo (depending on student interests, although venues can change) where students can put their skills and knowledge to practice. Field course embed students into research projects and NGO work to deliver exceptional hands-on experience
- A six month individual project exploring questions at the cutting edge of biodiversity research, offering supervisory opportunities at Queen Mary, Kew and other partners.
- The practical work will generally provide training in a variety of specialised techniques appropriate to the chosen area of research and is carried out in the research laboratories, under the supervision of a member of academic staff.
- Innovative teaching and research providing the knowledge, skills and experience that employers and PhD supervisors need.

Aims of the programme

The aims of the programme is to equip students with the skills to discover, describe, evaluate, explore, conserve and restore biodiversity, and to enable them to develop their prospects for a career in research, policy, band applied conservation.

Specific aims are:

- To understand and evaluate the reasons for biodiversity loss, and to appropriately measure this loss. Equip students with state-of-the-art knowledge to remedy this conservation challenge.
- To address the rising and urgent need to stop and reverse biodiversity loss
- To provide training in desk, lab and field-based assessment of biodiversity
- To equip students with the knowledge and skills for independent postgraduate study and a career in scientific research, science policy and applied conservation.
- To prepare students for working in multi-disciplinary environments.
- To produce graduates with an insight into biodiversity and conservation from a molecular to landscape level.

The programme will:

- provide a comprehensive preparation for students wishing to progress onto a research degree or into employment in a research-oriented environment, bridging the gap between the lecture-dominated programme of a typical undergraduate BSc degree and the research intensive PhD degree.
- provide a sound knowledge base in the fields studied and develop key transferable skills in the areas of communication, numeracy, information technology, working with others, problem solving, time and task management.
- foster the development of an enquiring, open-minded and creative attitude, tempered with scientific discipline and social awareness, which encourages lifelong learning.

The students will:

- plan and execute experiments, under the supervision of a principal investigator (PI) in a research environment.
- enhance their experimental, theoretical and analytical skills, and develop their ability to adapt and apply methodology to the solution of unfamiliar problems.
- develop their organisational and time-management skills, and their skills in the oral and written communication of research results and scientific concepts.

What will you be expected to achieve?

see Academic Content, Disciplinary Skills and Attributes below

Academic Content:	
A 1	Demonstrate a detailed knowledge of evolutionary, ecological and conservation biology theory, showing a critical awareness of current problems in freshwater, marine and terrestrial ecologies (depth depending on student interests) and develop insights, informed by the forefront of the academic discipline.
A 2	Demonstrate a detailed knowledge of the critical challenges facing biodiversity today, as well as the reasons behind it from across the biological, social economic and political spectrum.
A 3	Understand the breadth of solutions to solving biodiversity loss. From building an evidence base, to understanding the role and impact of policy makers, industry, local communities and practical conservation on biodiversity.
A 4	Identify the role of animals, plants and fungi in species and ecosystem health and habitat conservation (including assessment of threats), ecosystem service delivery/management, and livelihoods.
A 5	Identify the practical conservation opportunities in global animal, plant and fungal conservation, from freshwater, marine and terrestrial habitats, and gain an understanding in theories and techniques to specific conservation practices. Evaluate the contribution of new technologies and data can have to advance conservation

Disciplinary Skills - able to:	
B 1	Critically evaluate ecological, evolutionary and conservation science concepts.
B 2	Critically appraise the research literature in biodiversity and conservation
B 3	Demonstrate proficiency in lab and field-based research and practical techniques addressing issues of biodiversity and conservation.
B 4	Demonstrate proficiency in key statistical and analytical tools to analyse and obtain data in biodiversity and conservation.
B 5	Critically assess and evaluate methodology and experimental design.
B 6	Conduct independent, data-driven research by utilising a range of approaches.

Attributes:	
C 1	Communicate relevant concepts and conclusions, both orally and in writing, to specialist and non-specialist audiences.
C 2	Evaluate complex issues both systematically and creatively and make sound judgements in the absence of complete data.
C 3	Be able to apply concepts and knowledge to real-life data and situations.
C 4	Demonstrate a range of personal and professional transferable skills in project design and management, team-working, essay writing, communication and presentation skills.
C 5	Exercise initiative and personal responsibility.
C 6	Demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level.

How will you learn?

Face to face online workshops lectures and seminars are used to provide you with key concepts and knowledge. These events are supported by online materials on QMPlus, including links to relevant resources and further reading. Extensive hands-on practical sessions cement your knowledge from the workshops, seminars and lectures and allow you to become proficient and confident in the use of appropriate investigative research tools. Individual support from teaching staff is available throughout these practical sessions. Coursework assignments are designed to allow you to further hone your skills through private study and group discussion, with the completed coursework being assessed and detailed feedback returned to you. You will also be given the opportunity to learn through discussion groups.

You are welcome and encouraged to attend the science seminars at Kew and Queen Mary in order to broaden your knowledge.

The field trip module to a biodiversity hotspot (currently Madagascar, Cabo Verde or Borneo) enable for learning through direct application of knowledge and skills to a real-life scenario.

The individual research projects give you the opportunity to develop thinking knowledge and evidence in a particular discipline within the broad area of biodiversity and conservation, with project options in animal, plant and fungal biodiversity and conservation, in freshwater, marine and terrestrial ecosystems. You will apply the knowledge and skills gained in the taught modules to a topical research question that they will be the focus of your study over 6 months. You will learn through the application and modification of practical and analytical tools to a particular area of investigation and through evaluating the implications of your findings in the context of current knowledge.

Throughout the course, you will learn transferable skills in team working, communication and research while simultaneously improving your technical competence.

In addition to timetabled learning, you will be expected to use the self-directed study time to help achieve the programme outcomes. This should incorporate preparation for lectures, practicals and workshops, given both in person and on line. You will learn how to access and exploit the extensive literature, national and international networks that we have available. Your year group will be a team of like-minded peers researching preparing and attending relevant work in biodiversity and conservation.

Much of your learning will take place as part of your contribution to your research team during the project phase. The project will provide knowledge with a focus on practical experience of modern techniques in Biodiversity and Conservation, including in areas that include, but are not restricted, to phylogenetic analysis, spatial analysis, ecological modelling, laboratory work, analytical work, statistical analysis, field research and more.

Progress in the research project is monitored by the project supervisor through regular meetings as well as the laboratory book and a seminar at which you will state the nature and progress your work. You will also submit a dissertation draft and you will receive feedback on this.

How will you be assessed?

Continual assessment is used throughout the course, with the specific mode of assessment for each module selected according to the nature of the module content. All modules have two or three pieces of assessed coursework with feedback given in a timely fashion.

The programme will be assessed through an exciting and varied combination of essays, practical tests, group projects, workshops and presentations. There will be no examinations.

The research project is assessed on the presentation of the project results in the format of a scientific paper and in a project oral presentation.

The programme is designed to incorporate a broad range of assessments such as extended essays, oral presentations, statistics assignments, lab reports, field work, science communication pieces and dissertation for the research project.

The pass mark for all elements is 50%. Students require a total of 180 credits to graduate with a MSc degree.

Students are advised to check the Academic Regulations for further details regarding assessments processes and re-sits.

How is the programme structured?

Please specify the structure of the programme diets for all variants of the programme (e.g. full-time, part-time - if applicable). The description should be sufficiently detailed to fully define the structure of the diet.

This is a full time, 1 calendar year MSc starting in September.

Five, 15 credit-bearing modules are intended to impart key knowledge and skills. Each will be taught over a three week period, with an intensive combination of lectures, group discussions, field work and practicals in the first two weeks, followed by a week of private study in which to complete a substantive piece of assessed work.

These modules are followed by a 15 credit-bearing module that is the 'Biodiversity and Conservation Field Trip' to a biodiversity hotspot that is either an overseas terrestrial or marine destination.

The 'Biodiversity and Conservation Project', in which the skills and knowledge from modules 1-5 are applied to the challenges of a real-life biodiversity and conservation project at the cutting-edge of scientific understanding. Students will learn a suite of techniques necessary for research into topics in Biodiversity and Conservation. They will also learn how to write up results suitable for publication in an International Science Journal.

The aim of the research project is to apply the technical and transferable skills gained during the taught modules to a pertinent research question involving the management and/or analysis of biological data, delivering students who are able to develop appropriate future research projects to address topics in biodiversity loss and conservation science. The project will start 4 weeks after Christmas break and be conducted over 6 months in total (5 months bench work/data analysis + 1 month write-up).

During the results gathering component of the project work, students are required (i) present the results of their research at a seminar (10 min + 5 min questions). After results gathering is complete, students will (ii) submit a dissertation written in the style of a publication in an International Science Journal, in the style title, abstract, introduction, materials and methods, results, discussion, and literature cited.

In Semester 2/3 the students will embark on a two week international, residential field trip to a biodiversity hotspot, where they will learn about conservation in action.

Academic Year of Study FT - Year 4

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Research Frontiers in Biodiversity, Evolution and Conservation	Bio771P	15	7	Compulsory	1	Semester 1
Statistics and Data Analysis	BIO773P	15	7	Compulsory	1	Semester 1
Biodiversity Loss - Challenges and Solutions	BIO774P	15	7	Compulsory	1	Semester 1
Biodiversity Survey & Spatial Analysis	BIO789P	15	7	Elective	1	Semester 1
Ecosystem Structure and Function	BIO737P	15	7	Elective	1	Semester 1

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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Conservation and Restoration in Practice	BIO790P	15	7	Elective	1	Semester 2
Problems and Analysis in Biodiversity, Evolution and Conservation	BIO788P	15	7	Elective	1	Semester 2
Overseas field trip: Terrestrial ecology and conservation	BIO77XP	15	7	Elective	1	Semester 2
Overseas field trip: Marine ecology and conservation	BIO77XP	15	7	Elective	1	Semester 2
Overseas field trip: Conservation and habitat restoration	BIO77XP	15	7	Elective	1	Semester 2
Biodiversity and Conservation Research Project	BIO791P	90	7	Core	1	Semesters 2 & 3

What are the entry requirements?

Potential students are expected to have a minimum of a second class honours degree in a relevant subject such as biology, ecology, zoology, plant sciences, biochemistry, medicine, or genetics. Preference will be given to candidates with an upper second class or first class degree. Individuals with relevant professional qualifications or other relevant experience and qualifications will also be considered.
English Language proficiency is required at the standard level for PGT S&E entry (IELTS 6.5, TOEFL 92, PTE Academic 62).

How will the quality of the programme be managed and enhanced? How do we listen to and act on your feedback?

The Staff-Student Liaison Committee provides a formal means of communication and discussion between schools/institutes and its students. The committee consists of student representatives from each year in the school/institute together with appropriate representation from staff within the school/institute. It is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. Staff-Student Liaison Committees meet regularly throughout the year.

Each school/institute operates a Learning and Teaching Committee, or equivalent, which advises the School/Institute Director of Taught Programmes on all matters relating to the delivery of taught programmes at school level including monitoring the application of relevant QM policies and reviewing all proposals for module and programme approval and amendment before submission to Taught Programmes Board. Student views are incorporated in the committee's work in a number of ways, such as through student membership, or consideration of student surveys.

All schools/institutes operate an Annual Programme Review (APR) of their taught undergraduate and postgraduate provision. APR is a continuous process of reflection and action planning which is owned by those responsible for programme delivery; the main document of reference for this process is the Taught Programmes Action Plan (TPAP) which is the summary of the school/institute's work throughout the year to monitor academic standards and to improve the student experience. Students' views are considered in this process through analysis of the results from the National Student Survey (NSS), module evaluations and other internal Queen Mary surveys.

What academic support is available?

(i) We begin with a substantive induction programme specifically for its MSc intake each year. Students focussing on the elective modules delivered at Kew will also spend about three days at RBG Kew, learning about how live and preserved collections can be used in conservation science. This includes briefing from the Program Director on matters relating to the requirements of the programme and conduct of research in the laboratories as well as a series of briefings, demonstrations and visits aimed at

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ensuring that students are aware of the range of facilities for the support of study and research in the School.

- (ii) The Programme Director acts as the coordinator of all programme activities, supported by staff of the SBCS Administrative Office.
- (iii) Module organisers are the first point of academic contact for advice and support during the taught component. The programme director is available for consultation by students on this programme on any matter that relates to or impacts upon their studies.
- (iv) Project supervisors are allocated once project topics have been decided upon.
- (v) If there is requirement for further advice or support, then one of the School's Senior Academic Advisors or the Director of Taught Programmes may be consulted.
- (vi) Each student will have a primary project supervisor and a second academic advisor. The project supervisor who is a member of academic staff based in the School and a second supervisor, which would be at Kew, if the project is based there. The School supervisor is primary source of guidance on all matters relating to the research project component of the degree programme.
- (vii) Students will have access to teaching staff on an individual basis for matters relating to individual academic courses, or to deal with specific academic problems.
- (viii) Students will be made aware of the Queen Mary Student Guide and a range of other on-line documentation, published by the College Registry.
- (ix) All MSc programme details and documentation will be available on QMplus.
- (x) There are extensive library and IT facilities. This includes the main library, a subject librarian, the Student PC Service and the Computing Services Help Desk.
- (xi) Students will be made aware of IT Training Short Courses covering common software applications, operated by Computing Services.
- (xii) Students will be made aware of Support classes (mathematics) and drop-in sessions (chemistry, biology, physics and mathematics) operated by the Learning Development Unit (LDU).
- (xiii) Students will be made aware of English Language & Study Skills Programme. This includes pre-sessional and in-sessional classes in English language training for international students, and in-sessional Study Skills programme.
- (xiv) Students will be encouraged to engage with the Post graduate Staff-Student Liaison Committee(s) (PG-SSLC) for discussion of, and feedback on, all matters relating to academic programmes and departmental teaching activities. PG-SSLC meetings are held in each semester and include a representative from each programme of study. The committee is jointly chaired with the Director of PGT programmes and an elected student representative. Both joint chairs will set agenda items, report back progress to the meetings, and will chair component parts of the meeting.
- (xv) Other support services for students include
Advice & Counseling Service (for general advice, welfare information and counselling service).
College Residences Office (for support in finding accommodation).
Learning Support Service for Students with Disabilities/Learning Difficulties.
Language Learning Unit (for introductory courses in various modern European languages).
Student Support Centre of the Queen Mary Student Union.
Careers Service.

Programme-specific rules and facts

The programme follows the standard QMUL regulations for postgraduate programmes.

How inclusive is the programme for all students, including those with disabilities?

Queen Mary has a central Disability and Dyslexia Service (DDS) that offers support for all students with disabilities, specific learning difficulties and mental health issues. The DDS supports all Queen Mary students: full-time, part-time, undergraduate, postgraduate, UK and international at all campuses and all sites.

Students can access advice, guidance and support in the following areas:

- Finding out if you have a specific learning difficulty like dyslexia
- Applying for funding through the Disabled Students' Allowance (DSA)
- Arranging DSA assessments of need
- Special arrangements in examinations
- Accessing loaned equipment (e.g. digital recorders)
- Specialist one-to-one "study skills" tuition
- Ensuring access to course materials in alternative formats (e.g. Braille)
- Providing educational support workers (e.g. note-takers, readers, library assistants)
- Mentoring support for students with mental health issues and conditions on the autistic spectrum.

Links with employers, placement opportunities and transferable skills

The programme is delivered jointly by Queen Mary University of London and the Royal Botanic Gardens, Kew, thereby providing a balance between a pure academic environment and a collections-based scientific institution, both with global partners in industry. We have strong links with Environment Agency, Department of Food and Rural Affairs and many conservation bodies working in freshwater, marine and terrestrial environments with a focus on both animals and plants. The Programme Director and module organisers have excellent links with individuals in both academia and industry and these links are augmented by those of other colleagues, both within SBCS, in other parts of the College and throughout RBG Kew.

Programme Specification Approval

Person completing Programme Specification:

Professor Andrew Leitch

Person responsible for management of programme:

Professor Andrew Leitch

Date Programme Specification produced / amended by School / Institute Learning and Teaching Committee:

6 Jan 2022

Date Programme Specification approved by Taught Programmes Board: