Administration and Assistance

Help and advice

Please do seek help and advice as soon as possible if you have any problems or concerns. The course is very intensive, and this can exacerbate existing stresses. If you get behind or feel that you are not participating as fully as you would like to, it can also be very difficult to catch up if you don’t act quickly to obtain support. There are many people to whom you can turn.

The Course Directors are available to discuss any issues with you, whether related to the academic content of the course or a personal matter affecting your academic performance. Please be proactive about approaching them.

Julia Schroeder, the Postgraduate Tutor at the Silwood Park Campus, is available to all Silwood students for advice on academic, financial or other matters.

If you have any special requirements (e.g. for dyslexia or reduced mobility) then please let us know, ideally before you begin the course, so that we can accommodate them.

Mutual responsibilities

The Course Directors aim to make the course live up to your expectations and more. We are available to you for advice, support and academic guidance whenever required, and will ensure that you get the materials that you need to succeed. However, a Masters-level course is not a passive learning experience in which you are given the wherewithal to pass exams. Instead, it is your responsibility to manage your own learning and follow up avenues of interest using the library, the internet and other resources. We strongly encourage you to proactively engage your studies.

We expect you to endeavour to participate fully in all components of the course, whether assessed or not, and to commit yourself to the course full-time and wholeheartedly. This is particularly important in a Masters course such as this one because the whole group’s experience depends on everyone’s participation, and we all learn together, Directors and other course lecturers included.

There is information about College regulations at [http://www3.imperial.ac.uk/registry/proceduresandregulations](http://www3.imperial.ac.uk/registry/proceduresandregulations); please read this information. If you are absent from College for more than three days you need to inform a Course Director and the Postgraduate Tutor. You will need to produce a medical certificate after three days if absence is due to illness. If there is reason to believe that your state of health makes you unable to pursue your studies, or causes disruption to other members of the College, then you may be required to be assessed by the College Health Service.

Group facilities

The Darwin Room in the Hamilton Building is yours for the duration of the taught course. You are welcome to work in it at any time. Please do make it your own. We have a pin board in the room which you are welcome to use to display interesting articles, announcements, and the like. There is a small library of key course textbooks in the Darwin Room. Please don’t take the books out of the room so that they are always available to other students. Wi-Fi, vending machines for snacks and coffee, and hot water are available in the Hamilton Building (please don’t eat or drink in the classroom). Let a Director know if there is anything else that you need and we will try to get it for you. We also have a group e-mail address (for all course members, directors and tutors), an alumni mailing list, and there is a course Facebook page. Do use the e-mail list to discuss interesting topics, pass around information, and the like. We will use it to make announcements about the course and to pass on job advertisements and other information to you.

Student feedback

We aim to hold weekly feedback sessions and ask for your active participation, to let us know how you found that week’s module, including the lectures, group work and facilities. We act on this feedback both immediately where possible, and in the longer term by refining the course over time. Future cohorts of students will benefit from your insights. We also ask for feedback on your project and on your experience of the course as a whole. We place great emphasis on responding to student feedback.

In addition, we have a meeting of the Staff-Student Liaison Committee (SSLC) every term. In these meetings three student representatives meet with the Course Directors and Postgraduate Tutor, and other key staff members such as the librarian and computing officer when required. This provides an opportunity for students and Course Directors to formally discuss challenges and problems as well as what’s going well with the course. Feedback can then be used to make any changes required. Representatives are asked to volunteer in Week 2.

Your feedback is also important to the Department, the College and Imperial College Union. The following College-wide surveys give you regular opportunities to make your voice heard:

- PG SOLE lecturer/module
- Student Experience Survey (SES)
- Postgraduate Taught Student Experience (PTES)
In addition to these formal surveys, the course runs its own survey designed to understand what your motivations and goals for joining the course are, as well as our satisfaction with your learning experience. This comprises a survey during week two and another at the conclusion of the course.

ConSci Alumni Network

We have a strong alumni network that continues to grow and which provides a strong network to support you post-course. We want to stay in touch with you and support you in your conservation career after you leave. We have an alumni email list, to which we send announcements of jobs, interesting seminars and other opportunities. We have two annual evening events to which all alumni and current students are invited, so that the different years can mix and exchange experiences, job opportunities and the like. We are also available to you for advice and references as you apply for jobs and further study. Please do stay in touch!

Course aims and objectives

This Master of Science course aims to produce graduates:

- To meet the world-wide demand for conservation professionals who are both scientifically competent and able to operate effectively within the social and political context that conservation practitioners face.
- Equipped to pursue a highly successful career in conservation science, whether it be within academic research, the non-government sector or publicly-funded institutions in the United Kingdom or overseas.
- With a deep understanding of the fundamental principles underlying the conservation of biodiversity, both from the human and the ecological perspectives.
- Highly skilled at applying the principles, theories and skills required for solving real-world conservation problems.
- Highly competent in applying the techniques required for the planning of conservation initiatives, the collection and analysis of data, and the use of scientific information in addressing conservation problems.

By the end of the course, you should have knowledge and understanding of:

- The human-environment interface and the fundamental drivers of biodiversity loss, both human and ecological.
- Research practices and techniques, including how to engage effectively with theory, setting hypotheses, experimental design, information retrieval, sampling, field safety and research ethics, statistics and modelling, and the analysis data and presentation of results.

- Ways of collaborating effectively with the diverse range of stakeholders typically involved in conservation initiatives, inclusive of public speaking, writing in various styles for engaging audiences, facilitating group discussions, and an understanding of the importance and benefits of recognising and harnessing diversity to achieve effective outcomes for conservation.
- Key issues in conservation, covering the challenges of balancing nature conservation and human well-being, the fundamental underlying research, the implementation of conservation action, and the monitoring and evaluation of interventions to ensure their effectiveness.
- The role of conservation in national and international policy, and the means by which conservation action can be brought about. Understanding of essential and useful transferable skills, including problem definition and orientation, project design and management, preparation of grant proposals, teamwork, written reports, scientific publications and oral presentations.

You should have developed your intellectual skills, enabling you to:

- Identify, formulate, analyse and solve conservation problems using an integrated transdisciplinary approach.
- Integrate and evaluate information.
- Formulate hypotheses, collect appropriate data to test these hypotheses, and analyse the data robustly.
- Devise and use appropriate modelling and decision-support tools in order to develop and translate scientific understanding into appropriate conservation action.
- Plan, conduct and write-up a programme of original research.

You should have developed your practical skills enabling you to:

- Plan and safely and responsibly execute field-based data collection.
- Use computational tools and software packages.
- Analyse scientific results and determine their strength and validity.
- Prepare grant proposals.
- Give oral presentations.
- Write concisely and effectively for both scientific and lay audiences.
- Use the scientific literature effectively.

And you should have developed your transferable skills enabling you to:

- Communicate effectively through oral presentations, written reports and scientific publications.
- Apply statistical and modelling skills to understand and interpret quantitative analyses.
Teaching arrangements

The course runs for one year commencing the first Monday in October through to the end of September the following year. The Autumn and Spring Terms are taken up with the taught components of the course. All taught components are compulsory. Research projects formally begin after the spring term exams (although you are expected to take a break during the Easter vacation College closure), but thinking ad preparations for your research projects should begin towards the end of first term.

The taught course is arranged in week-long modules. The teaching timetable is blocked into two three-hour sessions - 10am-1pm and 2pm-5pm unless otherwise stated in the timetable. In some weeks we have a session reserved for private study and coursework preparation, usually on Wednesday mornings. Wednesday afternoon is reserved for extra-curricula sports and activities or private study. It is anticipated that reading and coursework will require additional study in your own time. During projects, you are expected to work full time, including Wednesday afternoons. Sessions may be unavoidably rearranged at short notice in the event of lecturer illness or other unforeseen circumstances, so please try not to make external commitments during the teaching week.

We are endeavouring to run as paper-less a course as possible. We aim to provide as much of the course materials as practicable for teaching sessions on Blackboard a few days in advance of the session. If this is not possible, paper copies of essential materials will be provided in the session. You will be trained in Blackboard during the Information Services session in Week 1.

On most Thursdays or Friday afternoons, we have a 30 minute feedback session. The purpose of these sessions is to provide students an opportunity to provide useful critique to the Course Directors so that the course can be consistently improved. All feedback is taken in confidence and is acted upon. Students are expected to engage with it in the spirit in which it is presented – respectfully, usefully and confidentially.

You are encouraged to make the most of the opportunities offered to you while you are at Silwood and the partner institutions, including attending the Thursday research seminar sessions at 1pm in the Hamilton Building where invited speakers from outside Silwood present on a broad range of environment-related topics. If there is an event that many students on the course particularly want to attend, let us know and we will endeavour to rearrange the teaching schedule to accommodate it.

Coursework Assessment

Your progress throughout the course is evaluated through five compulsory assessments. Each is designed to promote a range of skills useful to conservation professionals. The hand-in dates for the coursework are given below.

All pieces of coursework are double-marked (not blind, i.e. the markers known your identity) and are assessed for word length and plagiarism. If there are discrepancies between the two marks, then they will be discussed and a justified final mark will be agreed. Marking criteria are provided below.

All written assignments must be submitted electronically via Blackboard. The definitive time of submission will be taken as the time that the electronic version is received. If you hand in coursework or your thesis late, without properly documented evidence of mitigating circumstances submitted prior to the submission date, the coursework or thesis will be considered not submitted. This is University policy. The Board of Examiners reviews all such cases prior to the final grade allocation for the course. If you are encountering any personal or academic problems that require an authorised extension, please contact the course directors as soon as possible.

Oral Presentation at Durrell (2%)

The fortnight at Durrell will culminate in oral presentations by the groups who have been working together to research a topic during the week. Each individual should contribute equally to the oral presentation, and the group will receive a single mark for the presentation. The ZSL case studies week will also end with an oral presentation by the groups, but it will not be formally assessed. In both cases you will receive written feedback.

Presentation: 8th of December 2018

Policy-focused Essay Examinations (12.5% each)

Writing succinct reports on specific issues with tight deadlines is an important skill for many conservation
professionals. Your two policy-focused essay examinations are open book format and designed to test your ability to analyse a conservation problem and to critically synthesise relevant information rather than simply to absorb and regurgitate it. The topics for these assessments will relate broadly to conservation planning and management topics based on the lectures, class practicals, and your own reading and experience. The purpose of these two exams is not to test your ability to recall what was taught in lectures, but to think critically about a theoretical conservation issue or problem. You will have one week to prepare for the essay exam. In the open book format, the use of references, figures and graphics is encouraged. You will be expected to include a reference list at the end of the essay.

Information can be broadly obtained from numerous sources, not simply the scientific peer-reviewed literature. These could include the lectures you have as part of the course, discussions with professionals and your own experience.

During your preparation don’t focus just on reading. Think about the area that the essay question can cover and develop an essay plan and structure. Don’t include extraneous information for the sake of it - focus on the question and answer it. You are welcome to seek advice about essay technique from the Course Directors.

Exam 1: Friday 15th of December 2017, 9:30 am

Exam 2: Friday 23rd of March 2018, 9:30 am

**Grant Proposal (18%)**

Term 1’s main piece of assessed work is a Rufford Small Grant proposal. You will have a session on how to write a grant proposal in class, and you can then apply this knowledge to a proposal to carry out a conservation project of your choice. If you have a suitable piece of research in mind for your project, this would be a useful exercise to help you refine your plans. The proposal will be marked as if the marker were a member of the Rufford Small Grants Foundation, therefore it will be marked as a whole, and the mark will not be broken down into individual components (e.g. the method or the additional materials). You should do this coursework during Term 1, and can seek advice at any time from a Course Director.

Rufford Grant Due: 19th of January 2018, 10 am

**ZSL Essay (5%)**

For the ZSL case studies week, each student will write an individual 2000 word-essay (excluding references) on a research topic decided during your week at ZSL. The essay can address the topic as a whole, or if you prefer can focus on a particular aspect within the broader topic. If you do narrow the focus of the essay, make sure that in the Introduction and Discussion you still relate your essay to the topic as a whole. You are welcome to seek advice on essay content and structure from your ZSL tutor or module convenor.

The essay should have a clear, logical structure, sign-posted by subheadings. This can be a standard scientific paper structure: Introduction, Methods, Results, Discussion, Acknowledgements, References and Appendices. This structure can be applied even to reviews of published literature, since your approach to the gathering and organisation of material should be methodical, repeatable and possible to summarise in the form of a methods section. However, if you feel this approach works poorly for your subject, you are free to use a bespoke set of subheadings. Good essays have a strong narrative structure and logical progression. A well-structured essay is a well-argued essay. There’s nothing wrong with giving your opinions so long as you can justify them with evidence (opinion, therefore, should be confined to the Discussion section). Figures and tables are a useful way of conveying information concisely and breaking up the flow of the text. Insert them in the text directly after the first time you cite them. Ensure that the essay is well presented, and you have checked grammar and spelling, and you have referenced it correctly (this is worth focussing on, as it is often not well done). If you have any doubts or questions, please ask us.

ZSL Essay Due: 9th of March, 10 am 2018

**Research Project (50%)**

Your research project can be on any topic within the broad area of conservation science. Some projects are purely conservation ecology, and others pure social research for conservation. Many have aspects of both. The only stipulation is that the project should have a clear pragmatic application to the conservation of the natural world.

An MSc project needs to be an original piece of research. This does not necessarily involve collection of original data or statistical analyses - a critical analysis of existing research, a meta-analysis or systematic review can also be original, as can a policy-based study with a strong analytical framework. It is preferable in the short time available to carry out an in-depth, narrowly-focussed study (which is placed into a broader context) than a broader, and necessarily superficial study. Many MSc theses are potentially publishable, although some further work may be required after submission of the thesis. Your project mark counts for 50% of the overall marks for the course, broken down by marks for thesis, final presentation, viva exam and research performance (see below).
Choosing a project

It is best to keep an open mind about your project choices until you have been on the course for at least a few weeks, as there are many project opportunities to take advantage of that are unique to this course. Having said this, some projects are the idea of the student alone, often based on their previous experiences. Others are predetermined pieces of work that are offered by supervisors or outside organisations. Often, however, the project is a hybrid, in which you match your interests with the interests of your supervisor/collaborating organisation and work together to develop the idea. If you have a clear idea for your project, please discuss it with the Course Directors as soon as possible, to ensure that it is feasible and academically appropriate before committing to it. If you have a less defined interest, this is also worth discussing with us, so that we can point you towards appropriate potential supervisors. Do also consult MSc theses from previous years and from other MSc courses, either in the library at Silwood or South Kensington, or online (at http://www.iccs.org.uk), so that you can get a feel for what people have done in the past.

Projects are available at the following site, and are open to all Silwood students, although some are marked as more suitable for Conservation Science students:

https://mhasoba.pythonanywhere.com/marking_reports/default/project_proposals

Projects tend to be allocated on a first-come, first-served basis. We expect many projects to be offered by Christmas, particularly those offered to multiple courses. If you are interested in a project, you are advised to contact the prospective supervisor as soon as possible. You should also approach lecturers on the course if you are interested in their work, as they may have ideas that are not advertised. If a particular project idea proves to be very popular, then individual supervisors may run a selection procedure in order to decide who to allocate a project to. We will let you know the procedure when the need arises.

You should be thinking seriously about your project choices in the Christmas vacation and be actively pursuing ideas from the first few weeks of Term 2.

Bursaries

Research projects developed and completed for your degree are self-funded, however, some funding is offered by the Department to support your research projects. Funding is provided on a needs basis. For example, some studies may be entirely desk-based and have no substantial costs associated with them. Others, typically involving substantial travel, will have greater costs.

In order to secure funding, you will need to provide a detailed proposal that specifies the activities you intend to undertake and the costs of them. You will need to submit your proposal via Blackboard. The proposal should be no more than 3 pages long, and be submitted using the template located on Blackboard (and also in Appendix 1). The assessment of proposals will be conducted by the Course Directors and will take into account the quality of the case made for funding, the rigour of the proposed budget and methods to be applied for the research, and evidence of financial need.

Supervision

Your supervisory team must include either a member of Imperial College London’s academic staff or a senior member of staff at a partner institution (i.e., ZSL, Kew Gardens, or the Durrell Wildlife Conservation Trust), but additional supervisors beyond these organisations are welcome. You can choose to base yourself at any of the four partner organisations or with your external collaborator during the project (with their approval). Normally you could reasonably expect to be given desk space in the organisation at which your main supervisor is based.

Think of your supervisor as a resource, who you should contact regularly for advice, if only to give them a progress update. The supervisor expects on average to see you for about 30 minutes a week during the project period, though this is not likely to be uniform - you are likely to need intensive guidance early on when defining the project and in the analysis and write-up stage, less so during the actual research phase. Your supervisor may contact you if you do not get in touch regularly, but the onus is on you to make appointments to see them, as you are the principal investigator of your research project. You also need to ask about their travel plans and ensure that you give them time to read your work (at least one week) before you meet. You can expect your supervisor to read and comment on one relatively final draft of the thesis, either in full or in sections (however they prefer), but not more.

Timing and support

You may start planning your project at any time, and a research idea and approach should be completed before the end of the coursework period. You will be required to submit a project proposal and ethics assessment for approval by the Course Directors on the Project Review Day at the end of term 2. You need to obtain approval for overseas fieldwork in advance from the Faculty of Natural Sciences Health and Safety Officer and your supervisor, which will be given on satisfactory completion of a risk assessment, medical and contact details form. You will be given training in completion of these forms and in basic
fieldwork safety on the project preparation days.

Two Project Review Days will be held: the first prior to your field work at the end of term 2, and the second as you move towards completion of data analysis, in late July. These aim to assist you with your project design, data management, selection of methodology and methods (qualitative and quantitative), proposed statistics and other analytical techniques, and interpretation of results. All students must be present at both Project Review Days, and so must return from their fieldwork in time to attend.

If you require additional help with your analyses at any point during your project, you can approach any of your supervisors, as well as looking online (YouTube has many resources, for example). Advice is also available from the R help list (an e-mail list based at Silwood) - don’t be shy to ask!

**Thesis (70% of the project mark)**

**Thesis format**

Theses are formatted as a *Conservation in Practice and Policy* article for the journal *Conservation Biology*. Strictly speaking, when submitting to the journal, these articles are 5000 words, but we have extended the word limit to 6000 words, inclusive of references. Specific details of the format can be found in Appendix 2. Although the format is strictly that of a peer-reviewed journal article, several elements of the thesis must conform to the University’s thesis requirements. These are described in detail in the Guidelines in Appendix 2 and mostly comprise front materials at the beginning of the thesis.

**Thesis submission**

The submission of your thesis online through Blackboard will be considered your definitive submission for the purpose of assessment. Later, you will be required to load a final version on to the University’s Spiral database. If you have external supervisors or collaborating organisations, they will also need copies for their files – ask if they prefer a .pdf or hard copy. This can be sent to them after your examination, along with any datasets and other materials that they may need. Please bring a copy of the thesis to your viva.

If the thesis contains confidential information that a collaborating organisation does not wish to have made public, then you can include this in a removable Appendix, which will be removed before the thesis is placed in the library. You must make this requirement clear to Andrew or Morena and Amanda Ellis to ensure that the correct version is uploaded onto Spiral. Please submit the confidential information electronically as a separate .pdf document so that it will not be included in the online archive.

**We will assume that you agree to having a .pdf of your thesis archived in our online thesis library, unless you tell us that you would rather not do this.**

**Thesis Marking**

Your thesis is marked by two markers (usually one of the Course Directors). Then the markers agree on a joint internal mark, based on a discussion of the reasoning behind any discrepancies between their marks. Your external supervisors may be asked to comment on the project but not to give a mark. The project and all the marksheets will be assessed by an External Examiner.

**Previous years’ projects**

Theses and publications by staff and students of Imperial College London are to be found on Spiral, an open access repository, at http://spiral.imperial.ac.uk. Do look at them in order to get a feel for the range of topics, supervisors and external organisations that have come before you.

**Feedback on Coursework and Thesis**

You will receive written feedback and an interim provisional grade (not the exact percentage) for each piece of coursework and the Essay Exam, as soon as possible after the work is submitted. You will receive written feedback on the project and a statement of your final grades after the Board of Examiners’ meeting held at years’ end.

**The Final Presentation (10% of the project mark)**

All students will present their project as part of the Silwood Frontiers in Ecology and Evolution (FrEE) symposium in early September (see the Silwood Park Campus Guidebook for more information), following their thesis submission. These will be attended by your classmates, Course Directors and your friends and family, should you wish to invite them. This is an opportunity for you to get together with your colleagues, hear about the work each of you has done over the previous six months and to celebrate your achievements.

**Internal Viva (10% of the project mark)**

All students will undertake a viva with their two examiners. The aim of the viva is to provide you an opportunity to discuss your assessed work in advance of the Board of Examiners’ meeting, and to talk about your performance, experience of the course and your aspirations. The viva will focus on the project, but the examiners are free to ask questions on any topic relevant to the course. It is a chance for you to shine and to
demonstration your enthusiasm and knowledge about your subject.

**Project performance (10% of the project mark)**

Your project supervisor will assign a grade based on your work over the course of the project, including any field, lab or desk based research as well as how well you worked within a laboratory or group.

**External examiners**

The External Examiners approve the assessments, check standards through reading a selection of exam answers and coursework, assess the projects, and may viva the students. In the case of a disagreement between the Internal Examiners that cannot be resolved, the External Examiners arbitrate. The external examiners are there to assure the quality of our teaching and assessment. Further details on their role can be found at:


The Board of Examiners of this course have been granted a Dispensation from Anonymity by the College, which means that student performance will be discussed by name: this is required because of the project, coursework and the use of a viva to assess student attainment. All of this means that it is not possible to make decisions anonymously.

**Course details**

**Course themes overview**

**Term 1**

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<td>Introduction</td>
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<td>09/10/17</td>
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<td>Background to Conservation</td>
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<td>16/10/17</td>
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<td>Social-ecological systems</td>
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<td>10/11/17</td>
<td>Geographic information science and systems</td>
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<td>Determining effectiveness</td>
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**Term 2**

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<td>19/03/18</td>
<td>23/03/18</td>
<td>Reading week</td>
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**Taught themes descriptions**

Course theme descriptions are presented in alphabetical order.

**Background to Conservation**

Convenor: Andrew Knight

Conservation is a highly diverse sector. It is global in scope, and covers practitioner, policy, academic and support roles. The sector has evolved rapidly over the last several decades, transforming from a wildlife-focused set of activities to become more interdisciplinary. It also engages with a diverse range of other sectors including, business, government and academia.

**Aims:**

By the end of the module a student should be able to:

- Identify the major sub-sectors and participants in the sector
- Explain the history of the sector and the influence exerted by this history on current practices
- Outline the different stakeholders’ values and commitments to ensuring the persistence of nature

**Biological Computing in R**

Convenor: Matteo Fumagalli

In this module, you will learn how to use this freely available statistical software with strong programming capabilities. R has become tremendously popular in Biology due to several factors: (i) many packages are available to perform all sorts of statistical and mathematical analysis, (ii) it can produce beautiful graphics, and (iii) it has a very good support for matrix-algebra (you might not know it, but you use it!). So with R, you have an expanded and versatile suite of biological computing tools at your fingertips, especially for automating statistical analysis and the generation of
By the end of the module a student should be able to:

- Explain the different levels and types of collaboration and the benefits and limitations of each
- Provide examples (i.e., case studies) of where effective and ineffective partnerships have, or have not, been key to delivering conservation outcomes
- Identify and apply techniques for building effective partnerships

Decision-making and Critical Thinking
Convenor: Morena Mills

Effective conservation programmes require individual people, teams and organisations to make a myriad of decisions, the outcomes of which collectively influence the success of these initiatives. Ensuring that these decisions are defensible is essential because achieving conservation outcomes invariably requires trading-off different and sometimes competing values, costs and benefits of various stakeholder groups. Techniques exist for promoting effective decision-making, and these are increasingly employed by conservation organisations.

By the end of the module a student should be able to:

- Identify a range of decision-making contexts where deployment of strategic decision-making techniques can prove useful
- Understand why and how evidence-based decision-making can be applied
- Discuss the utility of systematic conservation planning as an example of effective decision-making

Determining Effectiveness
Convenor: Andrew Knight

Invariably conservation initiatives have limited funding to achieve their long-term goals. This means that effectiveness and cost efficiency are paramount. A systemic understanding of conservation contexts, monitoring and evaluation are all fundamentally important activities for determining the effectiveness of conservation initiatives.

By the end of the module a student should be able to:

- Describe why effectiveness is essential in conservation
- Describe the difference between monitoring and evaluation and how each can be implemented
- Outline a number of techniques for improving the effectiveness of conservation initiatives

Durrell
Convenor: Tim Wright

The Durrell Wildlife Conservation Trust is a globally-recognised non-government organisation aiming to ensure the persistence of nature. It operates a world-renown zoo, along with conservation initiatives focused primarily on endangered island biodiversity. It also trains future conservation professionals in project planning and management. Students will be trained in a range of practical topics relevant to conservation professionals.

By the end of the module a student should be able to:
• Be able to explain the role of ex-situ mechanisms for achieving conservation outcomes
• Explain the link between animal welfare and conservation
• Outline techniques for species recovery and reintroduction
• Be able to demonstrate how to implement project management techniques, including developing a logframe
• Demonstrate an ability to write a grant application

Ecological Research Methods
Convenor: Marcus Rowcliffe

Ecology as a discipline forms the basis for understanding the ‘Nature’ component of social-ecological systems. A sound understanding of concepts and techniques that provide the foundation for ecological research are an essential part of the conservation professional’s toolkit.

By the end of the module a student should be able to:
• Describe techniques for estimating species abundance
• Explain why tracking animals is an important technique for conservation
• Describe why and how fieldwork is undertaken to support various techniques in ecology
• Understand basic applications of Population Viability Analysis

Kew Gardens and Plant Conservation
Convenor: Colin Clubbe

The Royal Botanic Gardens, Kew is a globally-recognised leader in plant conservation. Students will spend a week collaborating with experts from Kew on topics as diverse as global strategy, herbaria, the IUCN Red List and economic botany.

By the end of the module a student should be able to:
• Identify and describe the major international plant conservation strategies
• Explain the utility of herbaria, horticulture and seed banks for conservation
• Complete an IUCN Red List assessment
• Explain the importance of genetics as a discipline to conservation

Social-Ecological Systems
Convenor: Morena Mills/ Marcus Rowcliffe

The idea of social-ecological systems (SEs) provides one way to conceptualise the world around us as a precursor to designing conservation initiatives that effectively conserve Nature. SEs are invariably complex, diverse and dynamic, meaning a broad suite of different types of knowledge are required to effectively achieve conservation outcomes.

By the end of the module a student should be able to:
• Identify and describe the major elements of social-ecological systems
• Describe the main disciplines influencing the delivery of conservation outcomes
• Understand ways of conceptualising conservation case studies in the context of social-ecological systems

Social Research Methods
Convenor: Morena Mills

People are a fundamentally important element of social-ecological systems. The social sciences provide the foundation for understanding people, how they function in groups and organisations, and how they interact with the natural world. A sound understanding of concepts and techniques that provide the foundation for social research are an essential part of the conservation professional’s toolkit.

By the end of the module a student should be able to:
• Explain the importance of robust experimental design
• Explain and implement quantitative social research techniques
• Explain and implement qualitative social research techniques
• Explain common economic theory and research techniques

Spatial Analyses and Geographic Information Systems (GIS)
Convenor: Rob Ewers

This week will teach key skills in using and handling GIS data, along with basic remote sensing to generate GIS data and the use of GIS data in a range of applications. We will use the open source GIS program QGIS (http://www.qgis.org/). We will look at creating and georeferencing both vector and raster data and how to use GIS tools to create a workflow to carry out simple analyses.

This week is shared with other MSc/MRes courses. CMEE students should bring their laptops to all sessions and use them instead of the desktops in the Computer Room.

At the end of this module you should have:
• Familiarity with a range of GIS data types
• Confidence in obtaining and handling GIS data
• Practical experience in creating maps
Statistics in R  
Convenor: Julia Schroeder  
In this module we will build upon the introduction to R you received in "Biological Computing in R" and review a core set of statistical methods that are of wide use in research projects. These statistical tests will form the basis for many data analyses you will do in the future. This module is shared with most courses and runs in two blocks A and B.

You will learn basic statistics for ecology and evolution, with a focus on applicability. Mostly parametric tests (descriptive statistics, t-test, ANOVA, correlations, linear models, hypothesis testing)

Threats  
Convenor: Andrew Knight/ Marcus Rowcliffe  
As an activity, conservation is only required because ecological systems are degraded and destroyed by people. Understanding the types of pressures people force upon Nature, and how to describe, quantify and manage them, is a long-standing part of conservation science and management.

By the end of the module a student should be able to:

• Identify and explain the impacts of the major threats to Nature
• Describe the impacts of invasive species on the delivery of conservation outcomes
• Describe how to assess and respond to different types of pressures on Nature

Urban Conservation and Entrepreneurship  
Convenor: Morena Mills  
The proportion of the world's human population that resides in cities and urban areas is increasing rapidly, and so it is critical that we understand the impacts of cities on biodiversity and the opportunities to promote biodiversity conservation in cities.

By the end of the module a student should be able to:

• Explain why understanding urban areas is important for biodiversity
• Describe how urban conservation can deliver conservation outcomes
• Identify opportunities where we can promote biodiversity conservation in highly modified environments
## Conservation Science – Timetable 2nd - 6th October 2017

### Monday 2nd October 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00 – 10:00</td>
<td>Fisher/Haldane Lecture Room</td>
<td>Welcome to Silwood Park</td>
</tr>
<tr>
<td>10:00 – 11:00</td>
<td>Darwin Lecture Room</td>
<td>Welcome to Conservation Science</td>
</tr>
<tr>
<td>11:00 – 13:00</td>
<td>Silwood Grounds</td>
<td>Silwood Treasure Hunt</td>
</tr>
<tr>
<td>13:00 – 14:00</td>
<td>Hamilton Foyer</td>
<td>Buffet Lunch</td>
</tr>
<tr>
<td>14:00 – 16:00</td>
<td>Hamilton Foyer</td>
<td>The Big Picture: Group Discussions</td>
</tr>
</tbody>
</table>

### Tuesday 3rd October 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 – 13:00</td>
<td>Darwin Lecture Room</td>
<td>Breaking-the-ice</td>
</tr>
<tr>
<td>17:00 – 19:00</td>
<td>First Floor, CPB</td>
<td>Welcome Reception</td>
</tr>
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</table>

### Wednesday 4th October 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:30 – 11:00</td>
<td>Computer Room</td>
<td>Introduction to the Library</td>
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### Thursday 5th October 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:30 – 15:30</td>
<td>Fisher/Haldane/CPB</td>
<td>Professional Skills Development Programme</td>
</tr>
<tr>
<td>15:45 – 17:15</td>
<td>Fisher/Hamilton</td>
<td>Silwood Lab Talks</td>
</tr>
<tr>
<td>17:30 – 18:30</td>
<td>First Floor, CPB</td>
<td>Networking Plenary and Refreshments</td>
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</table>

### Friday 6th October 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 – 11:00</td>
<td>Fisher/Haldane Lecture Room</td>
<td>Provost’s Welcome for PGT and PGR</td>
</tr>
<tr>
<td>11:00 – 12:00</td>
<td>Fisher/Haldane Lecture Room</td>
<td>Graduate School Induction Talks</td>
</tr>
<tr>
<td>14:15 – 15:15</td>
<td>Fisher/Haldane Lecture Room</td>
<td>Safety Induction</td>
</tr>
</tbody>
</table>
# ASSESSMENT CRITERIA

The criteria in the following tables are the basis on which the Department evaluates the assessments. The scale is based on marking approximately out of 20 with percentage marks allocated according to the bands indicated in the first column. The interim feedback you receive will tell you your position within the band (e.g. B-, B, B+).

## MSc Thesis

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria</th>
<th>Exceptional Project is an exceptionally well presented exposition of the subject, showing: (i) command of the relevant concepts and facts, (ii) a high critical or analytical ability, (iii) originality, (iv) evidence of substantial reading and (v) ability to collect, analyse, present and interpret data to a very high level. Potentially publishable in a good journal, without much revision.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A*</td>
<td>Distinction</td>
<td><strong>Excellent</strong> Project is a very well presented exposition of the subject, showing many of the above features, but falling short in one or two of them. Potentially publishable, with revision.</td>
</tr>
<tr>
<td>A</td>
<td>Distinction</td>
<td><strong>Very Good to Good</strong> Project (i) shows a clear grasp of the relevant concepts and facts, (ii) shows good abilities in data collection, analysis, presentation and interpretation and (iii) shows evidence of relevant reading or of critical or analytical ability. May be publishable with further work.</td>
</tr>
<tr>
<td>B</td>
<td>Merit</td>
<td><strong>Adequate</strong> Project: (i) shows a grasp of the basic concepts and facts, (ii) shows evidence of adequate ability in data collection, analysis, presentation and interpretation (iii) does not go beyond that, or goes beyond that but is marred by significant errors. Unlikely to be publishable in current form</td>
</tr>
<tr>
<td>C</td>
<td>Pass</td>
<td><strong>Unsatisfactory</strong> i) shows only a weak grasp of the basic concepts and facts, and is marred by major errors or brevity, ii) shows a confused understanding of how to collect, analysis, present and interpret data, iii) is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the field, iv) No potential for the work to be published in a scientific journal.</td>
</tr>
</tbody>
</table>

Analytical = assessing a hypothesis or statement by breaking it down into its elements and examining their inter-relationships and contribution to the whole; Critical = judging a hypothesis or conclusion by examining the validity of the evidence adduced for it.

## Exam Essays

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria</th>
<th>Exceptional. Answer is an exceptionally well presented exposition of the subject, showing: (i) command of the relevant concepts and facts, (ii) a high critical or analytical ability, (iii) originality, and (iv) evidence of substantial outside reading (where applicable).</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>Distinction</td>
<td><strong>Excellent answer</strong> is a very well presented exposition of the subject, showing many of the above features, but falling short in one or two of them.</td>
</tr>
<tr>
<td>A</td>
<td>Distinction</td>
<td><strong>Very Good to Good answer</strong>: (i) Shows a clear grasp of the relevant concepts and facts, (ii) gives an accurate account of the relevant taught material (as exemplified in the model answer), and (iii) shows evidence of some outside reading or of critical or analytical ability.</td>
</tr>
<tr>
<td>B</td>
<td>Merit</td>
<td><strong>Adequate Answer</strong>: (i) Shows a grasp of the basic concepts and facts, (ii) gives a mainly accurate account of at least half of the relevant taught material (as exemplified in the model answer), and (iii) does not go beyond that, or goes beyond that but is marred by significant errors.</td>
</tr>
</tbody>
</table>
**Written Coursework (Essays and the Rufford Grant Proposal)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td><strong>Exceptional.</strong> Question thoroughly addressed in a clear and logical write-up with evidence of substantial background reading, critical analysis and outside research. For proposal: clearly fundable without revision.</td>
</tr>
<tr>
<td>A</td>
<td><strong>Excellent.</strong> The question is thoroughly addressed, with evidence of critical analysis or outside reading and a clear and well-structured write-up, but falling short in one or two areas. For proposal: likely to be fundable with minor revisions.</td>
</tr>
<tr>
<td>B</td>
<td><strong>Very Good to Good.</strong> The problem is well understood and analyses are carried out properly with a few minor problems. For proposal: could potentially be fundable but would need major revisions.</td>
</tr>
<tr>
<td>C</td>
<td><strong>Adequate.</strong> A few issues misunderstood but important ones grasped. For proposal: unlikely to be competitive in an actual funding round.</td>
</tr>
<tr>
<td>D</td>
<td><strong>Unsatisfactory.</strong> Errors and clear lack of understanding with a poor to completely inadequate write-up. For proposal: Clearly uncompetitive.</td>
</tr>
</tbody>
</table>

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**Oral Presentations (marked out of 10)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td><strong>Exceptional.</strong> Question thoroughly addressed in a clear, engaging and logical presentation with evidence of substantial background reading, critical analysis and outside research.</td>
</tr>
<tr>
<td>A</td>
<td><strong>Excellent.</strong> The question is thoroughly addressed, with evidence of critical analysis or outside reading and a clear and well-structured presentation, but falling short in one or two areas.</td>
</tr>
<tr>
<td>B</td>
<td><strong>Very Good to Good.</strong> The problem is well understood and analyses are carried out properly and presented well, but with a few minor problems.</td>
</tr>
<tr>
<td>C</td>
<td><strong>Adequate.</strong> A few issues misunderstood but important ones grasped. Presentation has some problems but is generally clear.</td>
</tr>
<tr>
<td>D</td>
<td><strong>Unsatisfactory.</strong> Errors and clear lack of understanding with a poor to completely inadequate presentation.</td>
</tr>
</tbody>
</table>
Background reading

Below are a few suggestions for useful textbooks to bring you up to speed in areas where you require extra help. There is no course text - the course covers too wide a range of topics and in more depth than a single textbook can achieve. All these books are available in the library at Silwood, and some of the key texts are also available in the MSc teaching room. If there is a book you find particularly useful and think should be available in the teaching room, please let us know. You will also receive reading lists and recommendations from the individual speakers (see their session description for their key text recommendations).

Core texts - suitable for pre-course preparation

Core texts - for main aspects of the course

Background to Partner Institutions

Silwood Park
Silwood Park is a campus of Imperial College of Science, Technology and Medicine. Since 1986 there have been major developments on the site with four new College buildings, three house the Department of Biological Sciences and the fourth, the Centre for Population Biology (CPB). Adjacent to these buildings is the Technology Transfer Centre, with buildings leased to commercial companies for research.

Prior to 1947, Silwood Park was a private residence, the manor house of Sunninghill. The original Manor, at which Prince Arthur stayed in 1499 was known as Eastmore and was situated on the hill near Silwood Farm. In about 1788, Sir James Sibbald built a Georgian mansion on part of the present house and demolished the old ‘Eastmore’; he called it Selwood or Silwood Park. The name stems from the Old English for Sallow (Salix caprea Agg.) which presumably grew then along the banks of the streams that flow through the Park. The house was, in its turn, demolished, and the present mansion was completed in 1878. During the summer months of 1998 it was extensively refurbished.

Staff and research students of the Zoology Department were the first personnel at Silwood when the Field Station moved from Slough, but the department of Civil Engineering has used it since 1947 for courses in surveying. Botany and Meteorology started work here about thirty years ago and the Nuclear Reactor was opened in 1965. Over 1000 postgraduate students have been trained at Silwood since its establishment, about half of them taking PhDs. They have come from more than sixty countries, and Silwood-trained graduates have gone to almost every corner of the globe. The number of graduate staff and students working at any one time has risen from about a dozen in 1948 to over 200 today. Undergraduates from South Kensington attend for Field Courses and some final year projects. Silwood Park provides a wide range of habitats for the study of animals and plants in the field, as well as laboratories, controlled-environment growth facilities and computing resources for advanced experimental, molecular and theoretical research.

There is a booklet of Silwood Walks available on campus, with details of the natural history of the Park as well as several circular walks.

The Zoological Society of London
The Zoological Society of London (ZSL) is an international scientific, conservation and educational charity, with a mission to advance the conservation of animals and their habitats. ZSL runs ZSL London Zoo and ZSL Whipsnade Zoo, carries out scientific research in the Institute of Zoology and is actively involved in field conservation in other countries worldwide.

After a career in colonial administration, including the establishment of Singapore, Sir Stamford Raffles returned
to England, and together with the president of the Royal Society and other prominent individuals, founded ZSL in 1826. ZSL’s early aims were to stimulate and communicate all forms of zoological inquiry, and Fellows have included Charles Darwin. Appropriate to the age in which it was born, a particular focus of the Society was the exploration of new regions and the description of new species. From the start, a collection of exotic animals was established, which was opened to Fellows of the Society in 1828 – the world’s first scientific zoo – in Regent’s Park. However, it wasn’t until 1847 that the zoo opened to the public, in order to aid funding. As the twentieth century dawned, the need to keep and study large animals in more natural surroundings became apparent. Sir Peter Chalmers Mitchell (ZSL Secretary 1903-35) envisaged a new park no more than 70 miles from London, over 200 acres in size and easily accessible to the visiting public. In 1926 an ideal site was found, derelict Hall Farm, near Whipsnade village, nearly 600 acres on the Chiltern Downs. ZSL purchased the farm in December 1926 for £13,480 12s 10d. Whipsnade Wild Animal Park opened in 1931 – the world’s first open zoological park.

Today, the ZSL zoos house more than 650 species of reptiles, fish, invertebrates, birds and mammals, over a hundred of which are listed as threatened in the IUCN Red Data Books. Many of these are held as part of conservation breeding programmes, and ZSL has played a crucial role in some important reintroduction programmes, including the 1986 release of Pere David’s deer in Da Feng, China, the 1995 release of sand gazelles into the Empty Quarter, Saudi Arabia (the world’s largest release of captive-bred mammals), and the 1998 re-establishment of British field crickets in southern England.

In 1960 and 1961, Lord Zuckerman, then Secretary of ZSL, founded the Institute of Zoology (IoZ) with grants from the Nuffield and Wellcome foundations. Initially, the core focus of the Institute was comparative medicine and physiology, but the increasing emphasis on conservation across the Society over the ensuing decades led to a shift in focus to the current conservation mission. The Institute now employs around 35 full-time research scientists, working on conservation questions linked to population and behavioural ecology, macro-ecology, genetics and evolution, and wildlife health, reproduction and epidemiology. At any one time, there are between 40 and 60 postgraduate research students based at the Institute.

The final strand of ZSL’s work, Conservation Programmes (CP), grew out of the Society’s conservation breeding and reintroduction work in the 1970s and 80s. ZSL’s Conservation Programmes now focus on the conservation of wild animals and their natural habitats, working with local communities to conserve their environment and promote sustainability. Conservation Programmes are supported by a core team of around 50 staff based at Regent’s Park, with many field staff working primarily on projects in the UK, the Middle East, throughout Africa, Asia and many parts of the world’s oceans. See http://www.zsl.org for more information.

Kew
There is extensive coverage of the history and heritage of Kew at http://www.kew.org/science-conservation

Durrell
Durrell’s mission is to save species from extinction. Led by the visionary commitment of Gerald Durrell to create a “stationary ark”, the organisation has always focused on the conservation of highly endangered species in the wild. As conservation tools and techniques have developed over time, so has Durrell’s approach, which now focuses on the role and place of its target species within the broader ecosystem. Thus saving a species from extinction can require a broad range of actions from ecosystem restoration to community education. To meet these challenges Durrell has developed a core body of conservation expertise and where necessary forged partnerships with other leading organisations.

Gerald Durrell, the writer and filmmaker, founded Jersey Zoo in 1959 on Jersey, the largest of the Channel Islands, between France and the UK. In his travels around the world, he saw that the situation for many species was rapidly declining and felt that zoos were duty bound to do something to halt these declines. His vision was for an institution that would breed critically endangered species for reintroduction back into their native habitats. Coupled with this would be collaborative agreements with national governments, research to study the animals in the wild and training that would transfer the skills developed at the zoo to those working in the field. In 1963, the zoo became a charitable trust and has since become what we know today as the Durrell Wildlife Conservation Trust.

Durrell’s challenge is to remain focused on delivering its mission in a world where the threats and pressures continue to develop and diversify; becoming increasingly intertwined and globalized. However, Durrell remains true to the original vision and thus the focus of its conservation programme is to stabilise and restore populations of threatened species and their ecosystems in the long-term through evidence-based programmes of species recovery, habitat restoration and capacity building.

More details on the Trust’s activities can be found at http://www.durrell.org
Timetable Overview

Your timetable is available on the Imperial Mobile app (http://www.imperial.ac.uk/students/online-services/mobile/). Unless otherwise advised, all morning sessions run from 10am to 1pm and all afternoon sessions run from 2pm to 5pm, and sessions are held in the Darwin Room, Hamilton Building at Silwood Park. Practicals are held in the Silwood Computer lab unless otherwise stated. In elements shared with other courses the lectures will be in the Fisher lecture theatre. The Friday afternoon Reading Group and Feedback Sessions run from 2pm to 4pm. If sessions are held at partner institutions, transport from Silwood Park will be provided, with buses leaving from outside the Hamilton Building. Specifics of timings and other requirements will be provided a week in advance by email. You are welcome to make your own way if that is more convenient.

Your Course Directors

The Masters in Conservation Science course is run cooperatively by four partner organisation – Durrell Wildlife Conservation Trust, Zoological Society of London, Imperial College London and Royal Botanic Gardens, Kew. The Course Directors collaboratively develop course content and oversee course operations.

Colin Clubbe
Royal Botanic Gardens, Kew
C.clubbe@rbgkew.org.uk
Colin is the Head of the Conservation Science at Kew with particular interests in plant conservation and the impacts of invasive plants on small islands, and UK Overseas Territories in particular. His current focus is on the ecology and conservation of Caribbean islands and the British Virgin Islands in particular.

Andrew Knight
Department of Life Sciences
Imperial College London
Andrew.knight1@imperial.ac.uk
Andrew aims to improve human and organisational decision-making as they affect our collective ability to implement conservation initiatives. His work focusses upon human psychology and, increasingly, institutional and organisational systems. Examining the failure of conservation initiatives is a primary research focus. He works in production landscapes, on topics such as landholder commitment to stewardship initiatives on private land and the psychology of meaningful nature experiences. He is increasingly interested in environmental evaluation, systems thinking in practice and soft systems methodology. The private sector will come into increasing focus with research planned on failure management in environmental initiatives.

Morena Mills
Department of Life Sciences
Imperial College London
Morena.mills@imperial.ac.uk
Morena focuses on applied conservation research and is interested in improving current conservation decision making with insights from the social sciences. Her research spans marine and terrestrial systems and she runs both global and local scale projects. At a global scale, she is investigating what, how and why conservation interventions spread around the world. At a local scale she is investigating how the Brazilian Forest Code can be improved to better protect Atlantic Forest biodiversity.

Marcus Rowcliffe
Institute of Zoology
Zoological Society of London
Marcus.rowcliffe@ioz.ac.uk
Marcus has a background in population and behavioural ecology as applied to conservation and management problems. Much of his work currently concentrates on the problems posed by overexploitation, particularly social and ecological aspects of bushmeat hunting in West/Central Africa. He is also developing new approaches to the analysis of camera trapping data to better understand the abundance, distribution and behaviour of elusive mammal species, and applying these methods to understand patterns and processes of threat.

Tim Wright
Durrell Conservation Academy
Manager
Durrell Wildlife Conservation Trust
Tim leads the delivery of Durrell’s conservation training through Durrell Conservation Academy, organising and running courses in Jersey and overseas locations such as Brazil, Colombia, India, South Africa and the Middle East, and overseeing course design, assessment and quality assurance. Tim’s background includes the use of captive animal management as a tool for threatened species recovery, captive population management, population surveying in Madagascar, and the use of genetics and GIS for conservation.
Appendix 1 – Research Project Internal Funding Application

MSc in Conservation Science
Department of Life Sciences
Imperial College London

Research Project Bursary Application

Notes:
1. This proposal should be no longer than three (3) pages. No judging by reducing the font size!
2. This digital file should be submitted via Blackboard and named using the following protocol:
   FIRSTNAME_LASTNAME_YEAR_Project-bursary-proposal.pdf

<table>
<thead>
<tr>
<th>Project title:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student name:</td>
</tr>
<tr>
<td>Supervisor(s) and affiliation(s):</td>
</tr>
<tr>
<td>Collaborating organisation(s):</td>
</tr>
</tbody>
</table>

Introduction and problem statement

What is the context and why is conservation action required?

Aims and objectives

What is the overall goal, are what specifically do you intend achieve?

Stakeholders

Who will be involved in, or potentially affected by, the research?

Ethics requirements

1) What types of ethical conundrums could potentially arise (e.g., harm to participants, animal welfare)
2) Which collaborating organisation(s) also require ethics approval (their own or ICLs)

Proposed materials and methods

What techniques and equipment will you require?
Expected outputs

What tangible and intangible products and results will emerge from your project?

Anticipated outcomes

What about your project is novel regarding the research conducted? How does it contribute to the thinking and/or practice of conservation? What outcomes do you anticipate will emerge from this work?

Proposed timeline

What are the important tasks, activities and milestones that define your project?

Budget

Provide a full assessment of ALL the costs required to complete your research. Include a full-cost accounting of all items, e.g., in-kind costs and those that may be covered by your collaborators. Add more lines where necessary. Costs should be presented in British Pounds (£).

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (£)</th>
<th>Units</th>
<th>Subtotal (in GBP)</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Total</td>
<td></td>
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</tr>
</tbody>
</table>

Statement of financial need

Why do you require this financial support? Be as specific as possible please.

References (if necessary)

List of literature cited in this document, including peer-reviewed and non-peer-reviewed articles.
Appendix 2 - Thesis Guidelines

Masters in Conservation Science
Imperial College London

Thesis Format and Structure

2016-2017

The information below is adapted from the Author Guidelines and the Style Guide for Authors found on the Wiley website for the journal Conservation Biology, as downloaded on 27th March 2016. No, the Style Guide doesn’t offer advice on how to dress-for-success as a conservation professional. Refer to Attenborough for that sort of advice. These documents can be found at:

http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1523-1739/homepage/ForAuthors.html

It is suggested that you read these two documents once you’ve read the guidelines presented here.

Theses for the Masters in Conservation Science should be submitted for examination formatted as a Conservation Practice and Policy article per the Author Guidelines and the Style Guide for Authors (see below).

The purposes of having your thesis submission formatted as a paper for an international peer-reviewed journal is to provide you the best opportunity to:

1. Learn how to prepare and write a manuscript that translates your research into a format expected and accessed by conservation scientists and practitioners;
2. Understand how a journal submission process functions;
3. Complete your Masters with a manuscript, that with minor editing, is ready for submission to Conservation Biology (or another international peer-reviewed journal)
4. Produce a manuscript (based on your thesis) so that you have one listed on your curriculum vitae that provides future employers a tangible example of your ability to write a scientific paper. This is useful whether or not you intend to pursue a career in research.

The Conservation Practice and Policy format has been chosen because:

1. Conservation Biology is the flagship journal of the Society for Conservation Biology and the most well-known journal in the field;
2. This article type has an explicit focus on applied research;
3. The format, including the word limit, is typical of the suite of conservation journals, such as Animal Conservation, Biological Conservation, Conservation Letters and Oryx.
Thesis Guidelines

Title Page and Front Materials

The title page (i.e., the cover page to a thesis) must bear, in addition to the title and the student’s name and CID number, the following wording:

“A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science and the Diploma of Imperial College London”

The College logo can be included on the title page. It can be found here: http://www.imperial.ac.uk/brand-style-guide/visual-identity/the-imperial-logo/

The College crest should not be included on the title page or throughout the thesis. The crest is reserved for uses that promote the heritage and history of the College, such as degree certificates and invitations to formal College events. Logos of organisations that supported the research may be included on the title page following approval from these organisations. For more details, please contact style.guide@imperial.ac.uk

The front materials comprises information typical of theses submitted to a university for examination, and are situated before the manuscript proper. It should include, in this order:

Declaration of Own Work

A clear statement of what parts of your thesis are your own work. e.g. if you are using data collected by someone else, who collected which part of your dataset, or if you are working as part of a team, which aspects of the project you led. It can be phrased as:

I declare that this thesis, “THESIS TITLE”, is entirely my own work, and that where material could be construed as the work of others, it is fully cited and referenced, and/or with appropriate acknowledgement given.

Signature __________________________________

Name of student: STUDENT NAME

Name of Supervisor(s): SUPERVISOR(S) NAME(S)

Word count

Simply expressed as “Word Count: NUMBER OF WORDS”.

Table of Contents

A list detailing the headings and subheadings of all sections throughout the manuscript proper, inclusive of their page numbers. Lists of Tables and/of Figures are not required.
List of acronyms

Any abbreviation used within the manuscript proper should be catalogued in alphabetical order.

Acknowledgements

Two ‘Acknowledgements’ sections are required. The first is included within the front materials and may serve as a general thank you to any person, institution and/or organisation that contributed financial, logistical or intellectual input to the study, or more generally to the student’s completing of their degree, that a student deems appropriate for inclusion. This may include non-professional people, institutions and/or organisations, such as family or friends. This section does not contribute to the word count.

The second Acknowledgements section is included within the manuscript proper immediately after the Discussion and before the Supporting Information Statement. It should be written in a succinct and formal style and recognize only those persons, institutions and/or organisations that directly contributed to the study. This section does contribute to the word count.

Students should refer to theses submitted the year prior to their own for an example of how the title page and front materials can be formatted.

The Title Page and Front Materials pages do not require line numbering (as does the manuscript proper), and page numbers for these two sections should be formatted as lower case Roman numerals (i.e., i, ii, iii…) as opposed to the standard numbering used to number the pages of the manuscript proper (i.e., 1, 2, 3…).

Thesis Guidelines

Instructions for Authors

Conservation Biology welcomes submissions that address the science and practice of conserving Earth’s biological diversity. Papers published in Conservation Biology emphasize issues germane to any of Earth’s ecosystems or geographic regions and that apply diverse approaches to analyses and problem solving.

Thesis Structure and Word Limits

Conservation Practice and Policy papers in Conservation Biology address the applications of conservation science – whether natural, social or interdisciplinary science – to specific goals for management, policy, or education. Topics can be important to decision making, planning, and implementation of conservation, and on applications or outcomes that provide opportunities for learning.

The word count is 6000 words and has been chosen because it is a roughly average word limit for a paper in an international peer-reviewed journal focused on conservation. Remaining within
this word count requires writing concisely, which is more challenging than writing at length, and so serves as a clear demonstration of your ability to write in a professional style. There is no minimum number of words required for your thesis. The Examiners may choose to impose a penalty on theses exceeding the 6000 word limit.

The word limit includes all text from the first word of the Abstract through to the last word in Literature Cited section. It does not include legends for tables and figures or the body of tables. A Supplementary Information section can be used for non-essential text, tables and figures that support the exposition of the study and demonstrate the extent of work undertaken. Manuscripts that substantially exceed the word limits specified will be marked down.

Figures and Tables should be located in appropriate places with the text of the thesis, and not at the end of the thesis (as requested by Conservation Biology). It is suggested that your figures be prepared as separate image files and then inserted into your thesis document. This will facilitate submission to a journal at a later stage as they typically require image files to be uploaded separately.

Manuscript Specifications

The Conservation Biology Style Guide for Authors contains detailed information on how to format a manuscript for Conservation Biology. Manuscripts must be in English. Double-space all text and number all lines (including in figures and tables), but line numbers are not required for the Title Page and Front Materials, nor for the files included as Supporting Information. Do not use footnotes. Metric measurements must be used. All pages except figures must be numbered. We strongly recommend that authors whose first language is not English ask a colleague who is a native English speaker to proofread the manuscript before submission.

Abstract

Include the abstract before the Introduction as part of the main document. Above the abstract provide the title of the paper. The abstract should not exceed 300 words. The abstract should state concisely the aims, methods, principal results, and major inferences of the work (i.e., it should be a mini-version of the paper). Do not include incomplete or uninformative descriptions (e.g., "A new method of analysis is described." or "We discuss how our approach could be used as a tool for more sustainable management of forest systems."). Do not include acronyms in the abstract.

Students are encouraged to provide a version of the Abstract in the indigenous language of the people of the region in which their study was conducted (Conservation Biology provides one in Spanish). The aim is that this may assist to improve local people’s access to the thesis. This is not an essential requirement, and marks are not lost or gained for including, or not, a translated Abstract.

Human and Animal Subjects

When reporting on studies that involved human participants or animal subjects, supply a statement in the Methods section that specifies the ethical guidelines with which you complied. This includes the Imperial College London requirements, and those of any organisations that
required you to comply with their specific requirements. Include permit numbers, if applicable.

**Citations**

Use the following format for literature citations in the text: Buckley & Buckley 2000b; Pacey 2004. Arrange strings of citations in chronological order (oldest first). Do not cite work that has not been published as either unpublished or data not shown. A submitted manuscript is not published. Examples of citations and information on how to handle unpublished materials are provided in the Style Guide for Authors.

**Tables and Figures**

Include no more than 1 supporting element (i.e., table or figure) for every 4 double-spaced pages of text (from the Abstract through the Literature Cited). If a table or figure has only a few data points, incorporate the data into the text. Tables must be double-spaced, without vertical rules, and must not duplicate material in the text or figures. Table legends should be no more than three sentences, and use the same style and sized font as the main text. Tables should not contain colors, gray-scale shading, or other graphical elements. Figures must be of sufficient quality and resolution to remain clear at 60% reduction. Text boxes are not allowed.

**Supporting Information**

Appendices are allowed and are titled as Supporting Information. They can be in any format. They should be named, cited, and described in the text as specified in the Style Guide for Authors. They may include any information in any format that supports the study being reported. Their contents are not included in the word count.

**Conservation Biology Style Guide for Authors**

**Number of tables and figures**

Include no more than one supporting element (i.e., table or figure) for every four pages of double-spaced text (from the Abstract through the Literature Cited). If a table or figure has only a few data points, incorporate the data into the text.

**Appendices and supporting information**

Conservation Biology rarely allows appendices in the print version of the journal but does allow digital Supporting Information. You are able, therefore, to provide Supporting Information with your thesis. Supplementary data, detailed method, or details of additional results that support the main findings of the study typically should be provided as Supporting Information (see below for further information). This includes provision of metadata (i.e., data describing a dataset) that can alert a reader to the source and custodian of datasets used in the study.
Manuscript section headings and order of sections

Conservation Practice and Policy papers should contain the following sections in the following order: Abstract, Keywords, Introduction, Methods, Results, Discussion, Acknowledgements, Supporting Information description paragraph (if there are Supporting Information documents) and Literature Cited. Note that ‘Methods’ and ‘Methodology’ are distinctly different entities with distinctly different technical meanings, so use ‘Methods’ for this section. Do not include a Conclusion section (conclusions are part of the Discussion).

A small number of studies may lend themselves to alternative formatting. The potential to use an alternative format should be discussed with, and approved by, a Course Director. This includes, for example, the combining of sections (e.g., Results and Discussion).

Do not number section headings or subheadings, but rather use distinct styles for each level of heading. For example:

<table>
<thead>
<tr>
<th>Main headings (Level 1)</th>
<th>MAIN HEADING</th>
<th>Capitals, Bold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-heading (Level 2)</td>
<td>Sub-Heading 2</td>
<td>Title case, Bold</td>
</tr>
<tr>
<td>Sub-heading (Level 3)</td>
<td>Sub-Heading 3</td>
<td>Title case, Bold, Italic</td>
</tr>
<tr>
<td>Sub-heading (Level 4)</td>
<td>Sub-heading 4</td>
<td>Sentence case</td>
</tr>
<tr>
<td>Sub-heading (Level 5)</td>
<td>Sub-heading 5</td>
<td>Sentence case, Italic</td>
</tr>
</tbody>
</table>

Title

Most readers of your thesis (or the subsequent paper you produce) will decide whether to read it solely on the basis of its title. Indexing and abstracting services and internet search engines also depend heavily on the information conveyed by the title. And, researchers search for particular topics and then read the titles. If your title does not reflect the contents of your paper well or if the meaning of your title is not immediately clear, your paper will not be read. Titles should be clear and concise. Do not use hanging titles (those with a colon or dash), titles that are complete sentences, interrogative titles, and titles that reference colloquialisms or popular culture. The problem with titles that are complete sentences is that they tend to create dogma (e.g., Wind Energy Development Does Not Affect Nesting Ecology of a Grassland Bird). Scientific knowledge is constantly evolving; thus, what is considered true currently may be questioned and proven inaccurate in the future. Interrogatives make poor titles because the entire manuscript can often be summarized with a single word: yes or no (e.g., Will the Exception to Protected-Area Reclassification Protocols Prove the Rule?). Hanging titles are overused and can almost always be shortened to a title that is more effective and eye-catching without being sensational.
Abstract

At the top of the abstract page provide the title of the paper. The Abstract should summarize the Introduction, Methods, Results, and Discussion in that order (i.e., it should be a mini-version of the paper). Key points from each of these sections should be identifiable within the Abstract. The Abstract should not include literature citations, much data, or phrases such as “We discuss . . . ” or “We summarize . . .”

Keywords

Include five to eight words or phrases that will be useful for indexing and for others to find your work when conducting literature searches. Do not use words in the title as keywords, and avoid general terms such as ‘conservation’. These should be included immediately below the Abstract and before the Introduction.

Footnotes

Do not use footnotes in the body of the manuscript.

Citations

Do not cite work or data that have not been published or are not available. Include such work or data as online Supporting Information and cite it as such in the text. If the data are available in a publically accessible database, you may cite that database. Include databases in Literature Cited.

In-text citations

In the body of the paper order citations from oldest to newest and use name-year format.

In most cases, enclose citations in text in parentheses. “Populations in sagebrush have higher reproductive success than populations in cheatgrass (Bird & Tree 2000).” is better than “According to Bird and Tree (2000), populations in sagebrush . . . .”

Use an ampersand (&) between author surnames when the citation is parenthetical: (Bird & Sanchez 2010).

When a citation is not parenthetical, use and: “Our results are consistent with the predictions of Wolf and Rhymer (2011).”

For citations with more than two authors, use et al.: (Hatchwell et al. 1996). Do not italicize et al.

List parenthetical citations chronologically (from oldest to most recent) and separate entries with a semicolon: (Zorenstein et al. 1991; Waddell & Fretwell 2001).

Separate the years with commas when citing multiple papers by the same author: (Cox et al.
“In press” means the cited paper has been accepted unconditionally for publication. Provide the year of publication in the text (Bird 2015), and in Literature Cited provide the volume number and substitute “in press” for page numbers (Bird IM. 2015. Nesting success in arid lands. Conservation Biology 29: in press.).

Use initials when referencing unpublished data held by the authors of the paper: (C.S.C. & L.K., data in Supporting Information). Use an initial for the first (given) name and spell out the last name (surname) for other sources of unpublished data or information: (R. Fowler, unpublished data [see Supporting Information]; M.E. Cortez, personal communication).

Software: capitalize the first letter only if the name of the program is a word (e.g., Partition, ArcInfo). If the name of the program is not a word, use all capital letters (e.g., SAS). Do not use trademark symbols.

Ensure that all references cited in text are listed in Literature Cited and vice versa.

Avoid “in. lit.” citations. Provide the original citations.

Literature Cited section

Provide the full names of all journal titles. Do not italicize titles.

If there are more than 10 authors, use et al. (Howard G, et al.) instead of listing the names of all authors.

Papers in review and personal communications should not be included in Literature Cited.

Proceedings and abstracts from conferences may be cited only if they have a “publisher” and the location of the publisher (or the organization from which the document may be obtained) can be provided.

Example Citations

Journal articles:


Edited books:


Reports:

Online journals:


If it has a DOI:


No access dates are needed for citations of online journals.

Internet sources other than journals:

Include the name of the organization hosting the website, their geographical location, and an access date (month year).


In press manuscripts:

Officially accepted manuscripts may be cited as in press in Literature Cited (Stevens J Trainer C. 2015. ….on marine ecosystems. Conservation Biology 29: in press.)

In text and in Literature Cited, you must provide year of publication (e.g., in text use Stevens & Trainer 2015).

Supporting Elements (Tables, Figures, Online Appendices)

Content

Tables and figures should be entirely self-explanatory and comprehensible in isolation from the text. Tables and figures should supplement rather than duplicate the text. Do not present large amounts of data in tables. A reader should be able to interpret tables and figures without referring to the text. Consequently, all abbreviations and terms unique to the paper must be defined in the figure legend or in the table caption or footnotes. Common statistical notations need not be defined (e.g., CI, SD, SE). Use the same terminology in supporting elements and in the text. Text boxes are not allowed.

Citation in text

Provide a summary or generalization of results and cite supporting elements parenthetically: “Models for species abundance were significant and explained 78% to 92% of variability (Table 2),” rather than “Table 2 shows the outcome of models of species abundance.” Abbreviate (“Fig.”, not “Figure”) unless figure is the first word in a sentence.
Tables
Captions should be one sentence long. A caption is the heading given for a table and is located above a table. Use the caption to describe the contents of the table as it relates to the topic of the manuscript.

In contrast, a legend is an explanation of the elements of a table and is located below a table. Refer to p.807 here for an example: [http://onlinelibrary.wiley.com/doi/10.1111/cobi.12668/epdf](http://onlinelibrary.wiley.com/doi/10.1111/cobi.12668/epdf). A list of a table’s columns or row headings is not an informative table legend. Use footnotes to provide needed explanations of row and column headings, to provide more information about specific data, and to define terms.

Too little information: “Results of extract tests.” and “Analysis of variance F values, treatment means, and habitat means.”

Too much information: “Anti-Candida, -leishmania, and -tumor activity of extracts from 11 species of sea cucumber. NA indicates no activity (IC_{50} ≥ 500 µg/mL against Candida and leishmania, IC_{50} ≥ 80 µg/mL against LoVo cell line). The * denotes that these activities are significantly different from those obtained from extracts isolated from the same species taken from the southern region.”

Define abbreviations in a footnote even if they are already defined in the text.

If there is only one footnote, use an asterisk (*). If there is more than one footnote, use letters (a, b, c). Order footnotes alphabetically from left to right and from top to bottom.

Do not use bold type.

Unless an entry is a complete sentence or a proper noun, capitalize only the first word of the first entry in a row and do not use periods.

Do not split tables into separate sections (e.g., Table 1a and Table 1b). Make separate tables (Table 1, Table 2) or combine data under the same columns or rows.

Use indentation to set off secondary (or tertiary) entries within a column (see example below).

Table 1. Logistic-regression models built with . . .

<table>
<thead>
<tr>
<th>Variable</th>
<th>Symbol</th>
<th>p</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>General modelb</td>
<td>f₁</td>
<td>0.0015</td>
<td>3</td>
</tr>
<tr>
<td>landscape ruggedness</td>
<td>rug</td>
<td>0.0113</td>
<td></td>
</tr>
<tr>
<td>forest cover (%)</td>
<td>bosque</td>
<td>0.0085</td>
<td></td>
</tr>
<tr>
<td>Human model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>human population</td>
<td>pob1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\*Significance level of coefficients . . .

bNext-most parsimonious models at . . .
Figures
Resolution should be at least 300 dots per inch (dpi); 600 dpi is preferable for figures with lettering. The use of color figures is encouraged for your thesis. You may have color figures in the online version and gray-scale figures in print.

Maps should include a scale bar and north arrow. A key should be provided that interprets the different types of symbols and shadings used. Established cartography standards should be adhered to, for example, roads presented as black lines, rivers as blue lines, and formally protected areas in green. Texts such as *Cartography: An Introduction* by the British Cartographic Society can be consulted for further detail.

Graphs
Label all axes and include units of measure in the label, for example, Number of species/km², Basal area (m²/ha).

Capitalize the first letter of the axis labels: Years since burn, Burned area (%), Burned area (ha), Seed production (seeds/plot).

Include a key in the figure itself rather than describing shading or shapes in the figure legend.

Match typeface and type size among figures. On a graph, the type size of axis labels and units of measure should be similar.

If a figure has more than one panel, use lowercase letters to designate the parts: (a), (b), (c). Each panel must be referenced clearly in the figure legend by its letter.

If there are many digits in numbers or relatively long descriptions along the x-axis, orient entries at 45 or fewer degrees.

All numbers along an axis must have the same number of significant figures: 1.0, 1.5, 2.0 (not 1, 1.5, 2).

The label for the y-axis should be oriented vertically to the left of the units (reading from bottom to top), and numerals should be horizontally oriented.

Center the labels along both axes.

Do not enclose graphs in a rectangle.

Do not use color on a figure that will be published in gray scale.

Supporting Information (online appendices)
Supporting Information should be cited in the text of the paper. Every citation within the text should be cited simply as “(Supporting Information)”, not by specific appendix number. Separate documents can be in any format and are listed as Appendices, and should be individually numbered. Before Literature Cited, insert a paragraph in the exact format shown below that provides a brief description of supporting information elements.
Supporting Information

XXX (Appendix S1), XXX (Appendix S2), and a XXX translation of the article (Appendix S3) are available online. The authors are solely responsible for the content and functionality of these materials. Queries (other than absence of the material) should be directed to the corresponding author.

Language and Grammar

Clear language

Our audience is broad and international. Clarity in language and syntax is important, especially for readers whose first language is not English. Avoid jargon and colloquialisms. If English is not your first language, we strongly recommend that you ask a native English speaker with experience in publishing scientific papers to proofread your manuscript.

Terminology

Some common terms in conservation science have multiple meanings (e.g., biological diversity, wildlife, connectivity). Clarify how you use such terms, and define specialized terms at first use in the Abstract and in the body of the paper.

Abbreviations and acronyms

Do not begin a sentence with an abbreviation. Use abbreviations sparingly. Define all abbreviations, initializations, and acronyms at first use. For example: analysis of variance (ANOVA), International Union for Conservation of Nature (IUCN).

Capitalization

Geographic designations: Do not capitalize a term that indicates region unless it is being used as a proper noun (e.g., western states, Southeast Asia). Capitalization of terms used commonly in Conservation Biology: the Tropic of Cancer, the tropics; North Temperate Zone, temperate zone; East Africa, North Africa, central Africa; central Asia; tropics, Neotropics; Amazon Basin; Central Honshu Lowland Forest (an endemic bird area); Cape Floristic Region (a hotspot of biological diversity); taiga.

Threat categories: Do not capitalize threat categories used by institutions or authoritative bodies: threatened, endangered, critically endangered, conservation concern, etc.

Active voice

In general, use we or I (i.e., active voice). For example: “We converted all GIS data to raster format.” rather than “All GIS data were converted to raster format.” Or, "Trained technicians surveyed the plots." rather than “The plots were surveyed by trained technicians.” In particular,
Methods should not be written entirely in passive voice.

**Tense**

Use past tense in the Methods (describing what you did), Results (describing what your results were), and in the Discussion (referring to your results). Use present tense when you refer to published results. The principal exception to this rule is in the area of attribution and presentation. It is correct to say, for example, “Toffel (2008) found [past] that extracts from iron weed inhibit [present] fungal growth.”

**Word usage**

*Using*: In scientific writing, the word *using* is often the cause of dangling participles and misplaced modifiers.

Examples: “Using tissue isolation protocol, mtDNA was isolated from the dried skins.” What *using* is modifying has been left out of the sentence. Better: “We used tissue-isolation protocol to isolate mtDNA from the dried skins.”

“Ivory samples were taken from tusks using a 16-mm drill bit on a 40-cm drill.” This implies that the tusks used the drill. Better: “We used a 16-mm drill bit on a 40-cm drill to take ivory samples from tusks.”

*Impact*: Use *affected*, not *impacted*.

**Multiple modifiers**

Do not use multiple adjectival nouns to modify a noun that is the subject or the object of the sentence: “We studied illegal African elephant ivory trade.” or “infected bird populations’ responses.” Better: “We studied illegal trade in African elephant ivory.” and “responses of infected bird populations.”

**Split infinitives**

A sentence should not sound awkward because it has been rearranged to avoid a split infinitive. When an adverb qualifies a verb phrase, the adverb usually should be placed between the auxiliary verb and the principal verb (e.g., this research will soon attract attention). Splitting an infinitive verb with an adverb can be useful for adding emphasis or making a sentence sound less stilted. Phrases such as the following are acceptable: the traps had been seriously damaged in a storm; differences in abundance were highly significant; to strongly favor.

**Pronouns**

Be careful with the pronouns *this, these, and it*. If you do not provide a qualifier, it is sometimes difficult to tell what these words refer to: “This program offers solutions to that problem.” Better: “This computer program offers solutions to the problem of incorrect sequencing of numbers.”
Numbers, Variables, and Statistical Elements

Numeral versus word: We follow *Scientific Style and Format*, 7th edition. Most numbers in most circumstances, even those under 10, appear as numerals (i.e., they are not spelled out). The numbers zero and one present exceptions; copyeditors will address these.

Longitude and latitude: l48°N, 78°W (no periods).

Percentages and degrees: use symbols (15% and 15°).

Fractions: may be spelled out (one-half, one-third) unless used with units of measure (0.5 mm or 0.5 years).

Decimal point: insert 0 before a decimal point (0.4, not .4).

Significant figures: Express calculated values (e.g., means, standard deviation) to not more than one significant digit beyond the accuracy of the original measurement. Report test statistics (e.g., *p* values, correlation coefficients) to not more than 3 significant digits.

SD and SE: mean (SD)=44% (3) or mean of 44% (SD 3)

Dates: day, month, year (e.g., 6 October 1987). Do not use abbreviations such as 5/3/14 or 5-3-14.

Numbered lists: for the most part, avoid the use of numbered lists in the text. “We used *x*, *y*, and *z* to take soil samples” rather than “We used three techniques to take soil samples: (1) . . . , (2) . . . , and (3) . . . .”

Insert a space between numbers and the unit of measure (6 m, 14 mL).

Delimiters: in mathematical expressions the order of delimiters is braces { }, brackets [ ], and parentheses ( ); in narrative text, order is the opposite, ([ ]); avoid use of braces. In functional notation, nested pairs of parentheses are used.

Define all variables used in an equation.

Italicize all single-letter variables in equations. Do not italicize variables with more than one letter (e.g., “RU” meaning reproductive units as opposed to *RU*, in which *R* and *U* are separate interacting variables) or words used in association with variables (e.g., *x* *forest*).

Complete words used as a variable should be lowercase (e.g., species). Each letter in multiple-letter abbreviations that are not complete words should be capitalized (e.g., AMF is acceptable for area of managed forest; PATCH for patch area is unacceptable).

Use the following abbreviations:

\begin{itemize}
  \item \( p \), probability
  \item df, degrees of freedom
  \item \( \chi^2 \), chi-square
  \item \( F \) (\( F \) test, variance ratio)
\end{itemize}
\( F_{ST} \) (genetic variance contained in a subpopulation relative to the total genetic variance)
CI, confidence interval or credible interval
SE, standard error (do not use ±)
SD, standard deviation (do not use ±).

**Scientific Names**

English and scientific names of birds should follow the checklist of the International Ornithological Congress (http://worldbirdnames.org/names.html). Deviations from spellings in this checklist must be supported by an explicit citation of the nomenclatural source (i.e., a published regional checklist or book on the birds of a specific area).

Common names of taxonomic groups other than birds should be in lower case (creeping thistle, common bushtail possum, gopher tortoise).

In the abstract and at first mention in the text, use common names (where one exists) followed by scientific name (genus and species) in parentheses: cane toad (Bufo marinus), Douglas-fir (Pseudotsuga menziesii), Florida Scrub Jay (Aphelocoma coerulescens). With a few exceptions, for example where no common name exists, after scientific name has been provided use common name.

Organisms: Clarkia springvillensis (first use); C. springvillensis (thereafter, even starting a sentence); spp. or sp. or var. (no italics).

**Conservation Biology Style Sources**


