PLANTS, PEOPLE AND THE ENVIRONMENT

GEOG 287/393

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Lectures: Tues, 10am (TG07) and Wed, 11am (QUAD4)

Practicals: Mon or Tues, 2-5pm

Plants are the foundation of all life on Earth. Apart from sustaining the biosphere, plant life provides more immediate and direct benefits to people and other species. We have been slow in recognising that we need to be concerned for the well-being of vegetation systems at least as much as we are for animals, birds, and insects. Moreover, an understanding of the nature of plant communities and vegetation types is fundamental to any attempts to manage local ecosystems, and to redress the damage caused by human actions. In this paper, we will investigate the nature of plants and vegetation in their environmental context. When we look at the vegetation of an area, with the task of understanding its "status", the questions we need to ask typically include:

- Is this the original vegetation of the area or has it been modified by natural processes or human actions?
- How does the flora of this area relate to that of other geographical localities, near or far?
- Are there any plant species of particular conservation value, especially in terms of their restricted distribution?
- What values do local communities, especially indigenous people, hold for the vegetation and especially for individual plant species?
- How vulnerable are the existing vegetation communities to disruption by modern human activities and what are our management options?

Aim of the paper:

To provide a framework and skills set for understanding the nature of plants, plant communities, and vegetation systems as the basis for investigating and understanding human relationships with vegetation at a range of temporal and spatial scales.

Learning objectives:

- to develop an understanding of the evolution and functioning of plants (287/393);
- to gain insights into patterns and processes shaping vegetation types and their geographic distribution at a range of spatial scales (287/393);
- to examine the threats to plants and vegetation and the natural and anthropogenic processes driving vegetation change (287/393);
- to review how plants and vegetation play a role in human life (287/393);
- to develop the necessary skills for conducting basic plant identifications, vegetation surveys and data analyses (287/393);
- to independently design a small research project and write a grant application to fund it (393).

Content and structure of the paper:

Lectures:

The lectures will provide you with the necessary background knowledge and understanding of the main concepts and ideas covered by this paper. The paper is structured into four main parts. The first addresses evolutionary and historical aspects of plant diversity globally and in New Zealand. The second covers the main environmental drivers of plant function and vegetation patterns. The third module introduces the main vegetation types on Earth and highlights differences and analogies between them. The final module focuses on human uses of and threats to plants and vegetation.

Three of the lectures are self-directed: you will be given a scientific article on a current research case study related to the previous lectures. The task is to read this article and write a structured abstract (detailed instructions will be available on Blackboard). You are encouraged to swap your abstracts with other people and have a chat about the paper. The purpose of these self-directed lectures is to practice structured and targeted 'reading with purpose' and to concisely summarise information from primary scientific literature - a skill essential and useful for many aspects of this paper and your (university) career.

Laboratories:

Programme: Laboratories linked to the paper run on Monday and Tuesday afternoon and the programme **starts on Monday, 5th August** and runs for eight weeks. The programme comprises a series of four, 2-week practical exercises on various aspects of plant and vegetation biogeography. **You will be assigned to one of four groups, for either the Monday or the Tuesday** afternoon programme. The practicals are organised on a "round-robin" basis: each group progressively works through the set of exercises, week by week. A practical manual will be provided before the practicals start and this will contain full details of each exercise, together with the necessary theory and explanatory material for each topic. A demonstrator will work with each group each week. This year, the four practicals are:

Practical 1: The species-area relationship
Practical 2: Māori indigenous plant knowledge
Practical 3: Ecology of urban vegetation
Practical 4: Environmental niche models

Reports: For each of the four practicals you are required to hand in a laboratory report for assessment. Details of what is required in each report are contained in the laboratory manual. Please also pay careful attention to the grading criteria listed in the lab manual. Note that the **reports are to be handed in before the following practical starts** (electronically on BlackBoard) and the demonstrators will mark the work by the following week. Reports will only be returned by the end of the programme. Late submission of reports: there will be a penalty of 10% of the original mark per day for late submissions of reports. The first late day starts at 2pm on Mon or Tues the week after the laboratory has finished. For information on referencing and citation guidelines, refer to the information provided on the last page of this course outline.

***Kingdom of Plants* - David Attenborough TV series:**

The three episodes of the BBC series *Kingdom of Plants* will be available on BlackBoard during the second week of the semester. This is an excellent series, aimed at the lay person, with very good examples of many of the plant and vegetation ecology themes discussed in

the course. Moreover, the programme visits many of the biomes we will cover in the third module, while the general treatment of plant adaptations to environmental pressures will reinforce some of the practical exercises. As such the series will provide a very useful and enjoyable introduction to the biogeography of plants and world vegetation. There is a **short worksheet** to be completed.

Scientific literature exercise:
Finding, analysing and interpreting scientific information is a fundamental part of any research exercise. It is paramount that you are familiar with different types of information and literature. It is also essential that you have the skills to find relevant literature and to cite and reference literature appropriately. To facilitate this, you are asked to complete a short self-directed exercise and to complete a **short worksheet**.

GEOG393 grant proposal assignment:
For GEOG393 students only, there is an additional assignment in the form of a **group project of c. 5 students**. It is your responsibility to find a group; a Discussion Forum on BlackBoard can help with this. The assignment is to write a (mock) grant application for an existing conservation-related community project funding programme. Details of this year's assignment are provided on BlackBoard.

Internal Assessment:

Internal assessment constitutes 50% of the paper which is made up in the following way for the two papers:

GEOG 287:

video worksheet:	3%
scientific literature exercise:	3%
individual lab reports (4 @ 11% each):	44%
Total	**50%**

GEOG 393:

video worksheet:	2%
scientific literature exercise:	2%
individual lab reports (4 @ 9% each):	36%
grant proposal assignment:	10%
Total	**50%**

Assignment submissions:

All assignments to submitted electronically in the respective dropboxes on BlackBoard:

- Video worksheet: Friday, 26th July, 12 noon;
- Scientific literature exercise worksheet: Friday, 2nd August, 12 noon;
- GEOG393 grant proposal assignment: Friday, 4th October, 12noon;
- Lab reports: before the next practical starts (for details see above and lab manual).

Lecture programme:

Lecture	Date	Topic
1	16 July	Introduction and key concepts in Plants, People and the Environment
		Evolution and History
2	17 July	Plant evolution and systematics
3	23 July	Mātauranga Māori, Whakapapa and Ki uta ki tai
4	24 July	Phytogeography – plants in space and time
		Plants and vegetation in their environment
5	30 July	The niche
6	31 July	*Current research case study I*: The war on velvetleaf
7	6 Aug	Individuals and communities
8	7 Aug	Adaptive strategies and functional types
9	13 Aug	Islands, remnants and fragments
10	14 Aug	Plants as indicators of climate change
		The nature of world vegetation
11	20 Aug	Classifying world vegetation: climate, floristics and life forms
12	21 Aug	Biomes I: Tropical and Subtropical vegetation
13	27 Aug	Biomes II: Mediterranean and Temperate vegetation
14	28 Aug	Biomes III: Boreal, Arctic and Alpine vegetation
15	10 Sep	*Current research case study II*: Global alpine biomes
16	11 Sep	*Half-time recap and summary of concepts covered*
17	17 Sep	Modelling global vegetation patterns
		Plants and people
18	18 Sep	Ecosystem services
19	24 Sep	Threatened plants and ecosystems in Aotearoa New Zealand
20	25 Sep	Human Impacts I: Habitat loss
21	1 Oct	*Current research case study III*: Human pressures on global tree diversity
22	2 Oct	Human Impacts II: Climate Change
23	8 Oct	Human Impacts III: Non-native species
24	9 Oct	Protecting plant biodiversity
25	15 Oct	*Full-time recap and summary of concepts covered*
26	16 Oct	*Exam revision and strategies*

Reading:

There is no set text for the paper. Instead, suggested reading material will be given in each lecture. You will also find it useful to consult a number of texts, mainly held in the Science Library, to reinforce the various lectures. In addition, specific sources will be listed for some of the topics, especially those relating to human impacts on vegetation, to reflect the type of research currently being carried out on these issues. The following texts all cover some aspects of the paper and are available on reserve in the Science Library or via the library's online access facility:

Adams, J.M. (2010) *Vegetation-climate interaction – how plants make the global environment*. Springer Verlag. (ebook at Otago library)

Bonan, G.B. (2008) *Ecological climatology: concepts and applications*. Cambridge University Press.

Breckle, S.-W. (2002) *Walter's vegetation of the Earth: the ecological systems of the geo-biosphere*. Springer Verlag. [earlier editions are listed under the author Walter, H.]

Canadell, J.G., Pataki, D.E. & Pitelka, L. (2007) *Terrestrial ecosystems in a changing world*. Springer Verlag.

Crawford, R.M.M. (2008) *Plants at the margin: ecological limits and climate change*. Cambridge University Press.

Dawson, J. & Lucas, R. (2005) *The nature of plants: habitats, challenges and adaptations*. Craig Potton Publishing.

Gaston, K.J. & Blackburn, T.M. (2000) *Pattern and process in macroecology*. Blackwell Science.

Gibbs, G. W. (2006) *Ghosts of Gondwana: the history of life in New Zealand*. Craig Potton Publishing.

Grime, J.P. (2001) *Plant strategies, vegetation processes, and ecosystem properties*. Wiley.

Gurevitch, J., Scheiner, S.M. & Fox, G.A. (2006) *The ecology of plants*. Sinauer Associates.

Ingrouille, M. & Eddie, B. (2006) *Plants: evolution and diversity*. Cambridge University Press.

Kareiva, P.M. (2011) *Natural capital: theory & practice of mapping ecosystem services*. Oxford University Press.

Keddy, P.A. (2007) *Plants and vegetation: origins, processes, consequences*. Cambridge University Press.

Wardle, P. (2002) *Vegetation of New Zealand*. Blackburn Press.

The use of generative Artificial Intelligence (Gen-AI):

Generative Artificial Intelligence (Gen-AI) is a technology that is used to generate text, images, data, and videos in response to specific prompts such as a descriptive phrase or instruction. Gen-AI uses machine learning to achieve this and includes tools such as:

- ChatGPT, a text generator;
- DALL-E, an image generator;
- Microsoft Copilot, AI platform with text and image generator.

In this paper you are permitted to use Gen-AI tools to assist you in your work. Gen-AI tools may be used to support your studies by:

- Helping you to revise your course content;
- Providing an overview of subjects before you begin researching in more detail;
- Providing examples for improving writing style and expression which may include grammar, vocabulary, and sentence and paragraph structure;
- Seeking alternative explanations to problems;
- Assisting in the analysis of data.

In this paper, if you do use Gen-AI tools for any assignment:

- all written text must be your own unless clearly marked as a quotation and/or referenced giving the original source;
- all tables, figures and illustrations must be your own unless clearly referenced giving the original source;
- you must declare how and where you have used Gen-AI tools in a separate paragraph at the end of your assignment.

The principle you should follow is that all submitted work must be your own and the work must reflect your capabilities.

Plagiarism/dishonest practice:

All students should make sure that all submitted work is their own. Care should be taken to correctly cite the work of others and the teaching team will be happy to provide guidance on this. Dishonest practice is seeking to gain for yourself, or assisting another person to gain, an academic advantage by deception or other unfair means. For further details about this please consult the following website: http://www.otago.ac.nz/study/plagiarism/. The most common form of dishonest practice is plagiarism. You plagiarise when you use knowledge that has been created elsewhere without indicating the source of that knowledge. Further information about plagiarism can be found at: http://www.otago.ac.nz/study/plagiarism/otago006307.html.

Any student found responsible for plagiarism in any piece of work submitted for assessment shall be subject to the University's dishonest practice regulations, which will result in some form of penalty, ranging from forfeiture of marks for the piece of work submitted, a zero grade for the paper, or in extreme cases exclusion from the University. There are no exceptions to this policy.

Marking scheme:

Grades awarded for internal assessment will have the following meanings:

Grade	%	Description	Meaning
A+	90-100	Outstanding	Fulfils the grading criteria to an unusually high standard
A	85-89	Excellent	Fulfils all the grading criteria to a very high standard consistently
A-	80-84	Verges on excellent	Fulfils the grading criteria to a high standard but not consistently
B+	75-79	Very good	Fulfils most of the grading criteria to a very good standard
B	70-74	Good	Fulfils most of the grading criteria to a good standard but not consistently
B-	65-69	Very reasonable	Fulfils most of the grading criteria but not consistently
C+	60-64	Reasonable	Fulfils some of the grading criteria to a competent standard
C	55-59	Fair	Fulfils some of the grading criteria to a competent standard but not consistently
C-	5054	Marginally passable	Fulfils some of the grading criteria to an adequate standard
D	40-49	Inadequate – Fail	Fails to fulfil enough of the grading criteria to a competent standard
E	- 40	Fail	Fails to fulfil enough of the grading criteria to a competent standard

Communication:

Blackboard and email are the main communication platforms for this paper. Announcements, documents and grades will be posted on Blackboard.

What do you do if you have concerns about the paper?

If any student is concerned with any aspect of the course then he or she should feel comfortable approaching the course coordinator and lecturer Ralf Ohlemüller. He will be happy to discuss any concerns that you may have. Alternatively, students can report their concerns to any of the demonstrators or tutor of the course, whom can follow these concerns up with other Departmental staff if required. If, after making approaches via these channels, you do not feel that your concerns have been addressed appropriately, there are impartial university channels that can be explored to help find a resolution. For further advice and more information about these alternative pathways contact Geography's Head of School.

Class representatives: to be appointed at the start of the course.

Support for Māori students:
General:
https://www.otago.ac.nz/services/maori#m%C4%81ori-student-support-officers---kai%C4%81whina-m%C4%81ori
Humanities Division:
https://www.otago.ac.nz/humanities/maori-at-humanities/kaiawhina-maori-support-for-maori-students

Support for Pacific students:
The Pacific Islands Centre:
https://www.otago.ac.nz/pacific

School of Geography Referencing and Citation guidelines

Citation is the process by which you record the source of relevant ideas, arguments, debates or evidence. There are two reasons for citing your sources. First, if you do not fully cite where your ideas come from you are effectively stealing someone else's ideas. This can be considered a form of plagiarism and academic misconduct. It is taken very seriously by both the School of Geography and the University. Second, it allows any reader to look further into the ideas that you are exploring to find out more.

There are many formal 'styles' of referencing. Some use footnotes, others use in-text citations. In the School of Geography, we ask students to adopt an in-text system of 'author-date' referencing called APA – (short for the Style developed by the American Psychological Association). Generally, it involves:

1) inserting the author's surname and the date of publication close to where the idea is expressed in the text AND
2) providing a full reference list of all works cited in the text of the essay or report.

The University Library has provided a useful summary of the most recent APA style, (7th edition), available here: https://otago.libguides.com/ld.php?content_id=47806328. It provides examples of commonly cited source material and explains how to reference them in your text and in your reference list. If this document does not contain the type of reference you have used, you will find links to further information and examples here:

https://otago.libguides.com/citation_styles/APA

Referencing can seem overly pedantic and complicated. But it is important for academic integrity. Once you are used to them, the conventions also provide a means to quickly see the type of sources an author is using, and how to find them. The most important points are:

- **Consistency:** Ensure you use the same formatting, order of information, and punctuation for each entry of the same type.
- **Complete information**: Provide all the information needed for someone to access the material.
- **Quotes:** as a general rule, keep quotes to a minimum (1-2 per page of text). Some disciplines prefer that no direct quotes are used. Get into the practice of paraphrasing well and providing a citation for the idea. Where you do use a direct quote ensure that it is "quoted" in double speech marks, and a page number is included in the citation (see the summary guide for detail).

Also note that although the School of Geography prefers the APA style, if you are familiar with another author-date system (eg Harvard), and you prefer to use that system, check with your lecturer as to whether that is appropriate for your assignment.