

GEOG 356: Resources Management

Fall 2019

Instructor:	Dr. Brent Doberstein
Room:	ES1-220
E-mail:	bdoberst@uwaterloo.ca
Office Hours:	Wednesday 10 am-noon (or by appointment)
Class Hours:	10:00-11:20TTh
Classroom:	AL 211
Text:	Virtual “coursepack”: a collection of papers to be downloaded from links posted on LEARN
Prerequisites:	GEOG 202 or GEOG 203 or Level >2B Faculty of Environment students

COURSE DESCRIPTION

Overview

This course is an introduction to the varied terminology, theories, methods and problems currently found in resources management. Through an examination of economic, behavioural, institutional and environmental decision-making in resources management, students will gain an appreciation of the challenges facing the main actors in resource management. Typical methods and techniques used in resource management, including impact assessment and forecasting, will be outlined. Throughout the course, case studies and examples drawn from countries and regions around the world will be used to clarify theoretical and methodological issues. As the course proceeds, students are encouraged to question approaches currently used in resource management, to understand some of the challenges facing resource managers, and to develop a personal set of ‘core concepts’ to be applied in future resource management-linked employment settings.

Learning Outcomes: By the end of the course students should be able to

1. Use a personal conceptual and methodological framework to examine resource management problems.
2. Compare and contrast resource management theory with real-world case studies from Canada and other countries.
3. Understand the regionally- and culturally-specific nature of resource management.
4. Identify newly-emerging trends and challenges in resource management.

Course Evaluation

Oct. 10	Test #1 (25%)→Addressing lectures, readings & A/V materials from Sept.12-Oct. 5 th
Oct. 19	Assignment #1 (25%) Virtual Conference Poster (submitted <u>electronically</u> via LEARN)
Nov. 17	Assignment #2 (25%) Group assignment
Dec. 3	Test #2 (25%) →Addressing lectures, readings & A/V materials from Oct. 17-Nov. 28 th

Required reading:

Virtual “coursepack”: a collection of papers to be downloaded from links posted on LEARN

COURSE AND UNIVERSITY POLICIES

Attendance

Attendance in class is at your discretion. However, there is often extra content in the notes displayed in class vs. the notes posted on the course webpage (E.g. discussion points or questions asked of the class, graphics-heavy images such as maps or diagrams), and all in-class discussions are valid “testable” materials. Also, all A/V materials (e.g. DVDs screened in class) are valid, “testable” materials, so complete notes should be taken for each DVD screened. For these reasons, attendance at each lecture is HIGHLY RECOMMENDED.

Responding to Student Inquiries (e.g. explaining material, test formats, etc)

If you have course-related questions, I strongly encourage you to either ask question during the class (so all other students can also benefit) or come to see me during my office hours. My email ‘traffic’ gets almost unmanageable at times, so please do not expect a timely response to questions asked via email. For example, an email sent at 2:00am the morning of a quiz will almost CERTAINLY not prompt an answer before the quiz is held! Also, Geography 356 has at least 1 teaching assistant who would love to answer any and all of your questions, so please feel free to drop in to teaching assistant office hours.

Missed test:

Both tests are mandatory, and thus, every effort should be made to attend each test. The only exceptions to this are those students who have a valid medical reason, personal or family emergency, etc:

- Valid medical reason such as illness or accident. New for 2019, a formal doctor’s or counsellor’s note is NOT required to have a test or assignment waived (let’s not burden the healthcare system!). You will however have to provide a **detailed typed/emailed explanation** of why you missed a test or were late in submitting an assignment.
- Significant personal or family emergency, death in the family, etc (with detailed typed/emailed explanation);
- Other valid reasons beyond the control of the student (to be approved on a case-by-case basis at the discretion of the instructor). If you know in advance that you will not be able to make a test, please contact the instructor as far in advance as possible to discuss alternatives.

If you miss a test for any reason:

- 1) Communicate in writing (e.g. email) to the instructor the reason you missed the quiz. Please be as detailed as possible.
- 2) Due to the time consuming nature of creating a make up test, tests can usually only be written on the day originally scheduled. Please do NOT assume a make up test is possible!

♦ Intellectual Property:

Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and

-Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository). **Example: if you upload course notes, assignment solutions or quiz questions to CourseHero, OneClass, etc, without the instructor's permission you are violating intellectual property rights and are then subject to academic integrity discipline.**

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

♦ Academic Integrity:

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here: <http://uwaterloo.ca/academicintegrity>. ENV students are strongly encouraged to review the material provided by the university's Academic Integrity office specifically for students: <http://uwaterloo.ca/academicintegrity/Students/index.html>

Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also complete the following tutorial:

<https://uwaterloo.ca/library/get-assignment-and-research-help/academic-integrity/academic-integrity-tutorial>

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline: <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>. Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance:

<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70>

Within ENV, those committing academic offences (e.g. cheating, plagiarism) will be placed on disciplinary probation and will be subject to penalties which may include a grade of 0 on affected course elements, 0 on the course, suspension, and expulsion.

Definition of Plagiarism: *"The act of presenting the ideas, words or other intellectual property of another as one's own."* (Source: University of Waterloo, Policy 71.)

To Avoid Plagiarism: The use of other people's work **must** be properly acknowledged and referenced in all written material such as take-home examinations, essays, laboratory reports, work-term reports, design projects, statistical data, computer programs and research results. The properly acknowledged use of sources is an accepted and important part of scholarship. Use of such material without complete and unambiguous acknowledgement, however, is an offence under policy 71.

♦ **Note for students with disabilities:** AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

♦ **Mental Health:** The University of Waterloo, the Faculty of Environment and our Departments/Schools consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. **Please note that help is available.** Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services <http://www.uwaterloo.ca/counselling-services> is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

♦ **Religious Observances:** Students need to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments. All test dates for Geog 356 are posted in the course outline distributed on Sept 5th so please make any requests for religious accommodation by the end of the following week (Sept. 13th).

♦ **Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70 - Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact your Undergraduate Advisor for details.

♦ **Appeals:** A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm

♦ **Unclaimed quizzes & assignments:**

Unclaimed assignments will be retained for one month after term grades become official in QUEST. After that time, they will be destroyed in compliance with UW's [confidential shredding procedures](#).

♦ **Communications with Instructor and Teaching Assistants:**

All communication with students must be through either the student's University of Waterloo email account or via Learn. If a student emails the instructor or TA from a personal account they will be requested to resend the email using their personal University of Waterloo email account. (NOTE: emails sent from a non-uwaterloo email account (e.g. Gmail, Hotmail, etc) may or may not be treated as spam, and may be quarantined automatically by the uwaterloo email system, so your instructor may not ever see your email!)

♦ **Group Work**

Assignment #1 and Tests #1 and #2: All tests and Assignment #1 are to be completed individually. No group work or collaboration is allowed on any test or on Assignment #1.

Assignment #2: Group work and collaboration is allowed and required for Assignment #2. Each group member is expected to contribute approximately equal work on the assignment, and to remain in communication with group members throughout the life of the group project (i.e. no group member is allowed to drop out of touch with other group members). After the assignment is submitted, any member of any group will be allowed to submit an assessment of other group members' work if they so choose (normally only done when there is a significant imbalance in work done, or if one group member "drops the ball"/does not deliver the promised work). If a *significant* disparity in individual effort is discovered, the member of the group who did NOT contribute equal work may have their final mark adjusted (at the discretion of the instructor).

◆ **Recording lectures:**

- Use of recording devices during lectures is allowed for personal use only.
- Video recordings may only include images of the instructor and not fellow classmates.
- Posting of videos or links to the video to any website, including but not limited to social media sites such as: facebook, twitter, etc., is strictly prohibited due to intellectual property restrictions described previously.

Co-op interviews and class attendance: Co-op students are encouraged to try and choose interview time slots that result in the least amount of disruption to class schedules. A co-op interview does not relieve the student of any requirements associated with that class meeting, especially tests.

When a co-op interview conflicts with an in-class evaluation mechanism (e.g., test), class attendance takes precedence and the onus is on the student to reschedule the interview. CECA provides an interview conflict procedure to manage these situations.

Students will be required to provide copies of their interview schedules (they may be printed from WaterlooWorks) should there be a need to verify class absence due to co-op interviews.

Late Assignments:

The assignment will be graded as per the above guidelines, and then **5% will be deducted for each day an assignment is late**. The instructor reserves the right to waive this deduction if the following prevents the student from handing in an assignment on time:

- Valid medical reason such as illness or accident (appropriate explanation is required);
- Personal or family emergency (with suitable explanation);
- Other valid reasons beyond the control of the student (to be approved on a case-by-case basis at the discretion of the instructor).

NOTE: If you know in advance that you will not be able to meet a particular deadline **for any reason**, please contact the instructor to make alternative arrangements. Also note that late assignments will not be accepted after marked assignments are handed back in class, or after the beginning of the final examination period.

Please ensure that you are diligent in *backing up computer files* and making *draft copies* of all assignments, as computer/disk failures, printer problems, etc, will not be considered a valid reason to waive the late assignment deduction. NOTE: Perhaps the easiest way to prevent computer file loss is to send to yourself an email attachment of your assignment after each significant work session, or, invest in a monthly cloud storage account.

Course Notes: Information for Students Using Desire to Learn (LEARN...course webpage for Geog 101)

Desire to Learn or "LEARN" is a web-based course management system that enables instructors to manage course materials (posting of lecture notes etc.), interact with their students (drop boxes for student

submissions, on-line quizzes, discussion boards, course e-mail etc.), and provide feedback (grades, assignment comments etc.). The degree to which LEARN is utilized in a particular course is left to the discretion of the instructor and therefore, you may find a large variance in how LEARN is being used from course to another. I personally use LEARN as a place to post Powerpoint notes and grades files, and as a way to quickly send messages to the entire class. I do not use LEARN for chat, discussion forums, etc.

Logging Into LEARN

Users can login to LEARN via: <https://learn.uwaterloo.ca/>
(using your WatIAM/Quest username and password)

Checking Your Userid and Password

Your password can be checked by going to: <https://watiam.uwaterloo.ca/idm/user/login.jsp>
If you still cannot get on after checking your password, please confirm with your instructor that you are on the class roster.

Getting Help

LEARN student help can be found at:
<https://uwaterloo.ca/learn-help/students>

Downloading Notes

About 70% of the content of any given day's lecture is posted on Desire to LEARN (LEARN) in PowerPoint format (in the "Lessons" section of the webpage), normally before any given lecture. It is recommended that you download and save, (or print off) these notes ahead of each class, and bring these to class regularly so you can add the remaining 30% of content (discussion notes, additional points, off-the-cuff examples given in class, etc). Do NOT rely on the availability of LEARN notes stored 'in the cloud' ... LEARN has periodically gone down for as long as 3 days (see this news article for details: <http://www.therecord.com/news-story/2623550-desire2learn-in-recovery-mode-says-there-has-been-no-data-loss-to-u/>)

Multimedia Notes (DVDs, Videos, in-class internet-based videos, etc).

Approximately 20% of course content is delivered through multi-media materials (DVDs, online audio or video clips), and ALL of this material is valid testing/quiz material. Therefore, each student should attend regularly and take comprehensive notes. If you miss a day when this material is shown, please arrange to obtain the notes from a classmate, and if possible, discuss these notes briefly with the note-taker. Many materials shown are the personal property of the instructor and only some are available on the internet.

Printing Notes

For best results, under the Print command select "Handouts", "Pure black and white", and then the number of slides per page you wish to view (6 per page conserves paper, but 3 per page allows for detailed additional notes to be added). If you want to print on both sides of the paper select "Properties", "Print on both sides", then "Flip on long edge".

Grading/Evaluation

Numeric grades on a scale from 0-100 are used in grading all assignments at the University of Waterloo. The following list will give you an idea of the basis upon which numeric grades are assigned:

90-100%:	Work that shows a high level of initiative and is clearly above and beyond what is expected at a third year level. Referencing, style, grammar/spelling, content and the development of ideas are all superior.
80-89%:	Work that shows good initiative and is above what is expected at a third year level. Referencing, style, grammar/spelling, content and the development of ideas are all good.
70-79%:	Work that shows initiative and is about what is expected at a third year level, but one or more problems are evident in referencing, style, grammar/spelling, content and/or the development of ideas.
60-69%:	Work that does not demonstrate initiative, has a series of problems in referencing, style, grammar/spelling, content and/or the development of ideas, and overall, does not fully convince the reader that the topic has been well considered
50-59%:	Work that is substandard/sloppy in places, has many problems in referencing, style, grammar/spelling, content and/or the development of ideas, and overall, raises more questions in a reader's mind than the work answers.
40-49%:	Work that is of consistently poor quality, demonstrates gaps in comprehension of the assigned material, and/or indicates that not enough time was taken to properly address the assignment
<40:	Work that is clearly of poor quality, demonstrates a lack of comprehension of the assigned material, shows little attempts at a personal development of ideas or efforts to back up arguments with suitable evidence, and/or indicates that the work was completed 'at the last minute'.

Assignment #1: Virtual Conference Poster: “Restocking Inventories” (Due Oct. 15th)

This assignment asks you to research and then design a “virtual/electronic conference poster” which outlines a specific effort to ‘restock the inventories’ of depleted **potentially renewable resources**. You must choose a resource which has declined in abundance compared to historical levels, and which has been the focus of efforts to “bring the resource back”. You do not need to print off a “real” poster since this would probably cost >\$75 !

Possibilities include:

- Reintroduction of *extirpated* populations of a particular wildlife resource (e.g. wolves in Yellowstone, bison on the Canadian prairies, wild turkeys in Ontario);
- Efforts to *increase the populations* of wildlife resources whose numbers have declined dramatically (e.g. Whooping cranes or Peregrine falcons in North America, Grizzlies in Western Canada, Mexican gray wolf, wild turkeys in Ontario, California condor, golden-lion tamarins in Brazil, mountain gorilla in Rwanda/Congo/Uganda, Pandas in China, etc), and;
- Efforts to artificially ‘restock the inventories’ of resources which were formerly available without management (e.g. pine plantations in New Zealand, managed forests in Norway and B.C, aquaculture in coastal B.C., forest/regreening in developing countries, fish restocking in specific Canadian and US lakes, migratory waterfowl conservation in North America, groundwater recharge in Mannheim, aquifer recharge schemes, etc.).
- Many other possibilities...if in doubt, please discuss with the instructor. **Whatever you do, do NOT choose a resource which has simply declined over time with no successful effort to ‘bring back the resource’.**

Poster Details: your virtual poster should be designed using a commonly available software package (e.g. PowerPoint, Adobe). The maximum size of your poster should be 3’ X 5’ (about 90 cms X 150 cms). Many examples of effective posters can be found online, but there are a few useful links **on the last page of his outline. You can also find free templates to download if you google “academic poster template”.**

Components

1. **Introduction**..... 10 marks
2. **History: resource depletion**..... 20 marks
 - earliest understanding of resource abundance & changes in resource presence/abundance* (e.g declining populations, reduced extent)
 - main reasons for declining resource* (e.g. habitat loss, over consumption, hunting, etc)
 - technologies contributing to declining resource abundance*
3. **Rebuilding inventories: overview of efforts to ‘restock’ or ‘rebuild’ your resource**..... 25 marks
 - review of initiatives, programs, policies, etc*
 - actors involved*
4. **Recommendations**.....20 marks
 - are current efforts enough?*
 - Ideas to maintain current inventories/or increase stocks*
5. **Bibliography**5 marks
 - alphabetical listing of all sources used*
6. **Style**..... 20 marks
 - Presentation* (graphics, headings, etc)
 - Poster “impact”* (e.g. colour, contrast, separation between sections, graphic elements which increase impact)
 - Supporting figures/tables/maps/photos*
 - Idea development* (logic, sequence, continuity, structure, grammar, sentence construction, word choice, etc.)
 - Citations* (i.e. cite all materials as you would a research paper...can use very small font)

Assignment #2: Take-home group report (25%.....Due November 16th) (2-4 group members per group)

You will be given a short reading detailing an obvious resource management “failure”. Using only the details provided in this report (no additional reading is required), brainstorm with your group a series of “lessons learned” (i.e. what do you learn from the failures listed in the reading?), and then list a number of plausible management responses/measures which build on this learning, connect to course content, and should improve future resource management. Paragraph format should be used for ‘lessons learned’, while bulleted format is acceptable for ‘recommendations’.

Pay particular attention to the question of “When should each recommendation be implemented”? When listing recommendations, use one of the following time categories:

1. Short-term measures (0-2 years)
2. Medium-term measures (3-10 years)
3. Long-term measures (>10 years)

The report will be distributed on Thursday, Nov. 7th. It is suggested that each group member read over this report by Saturday Nov. 9th, independently noting “lessons learned”. Each group should then “meet” on Nov.10-13th, to work out the details of the group response for this assignment. NOTE: Group meetings can be done in any format acceptable to the group (in person, Skype/Zoom/virtual meeting, teleconferencing, single meeting/multiple meetings, etc). It is suggested that one ‘chairperson’ from each group should be nominated to keep group work on track, organize meetings, and assemble and perhaps edit all group member’s outputs into a coherent final report.

NOTE: each member of the group will be allocated ‘voting points’ which will be used to adjust the marks of other group members if necessary. If all group members are judged to have contributed roughly equally, there is no need to use your voting points....each member of the group will receive the same mark.

It is expected that each group’s response will be a minimum of 6 pages and a maximum of 10 pages long. (1.5 space, 12 font)

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Checking Your Userid and Password

Your password can be checked by going to: <https://watiam.uwaterloo.ca/idm/user/login.jsp>
If you still cannot get on after checking your password, please confirm with your instructor that you are on the class roster.

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PowerPoint Viewer: The web addresses for Microsoft PowerPoint viewers (for those who do not have PowerPoint on their computers) is: <http://www.microsoft.com/download/en/details.aspx?id=13>

LECTURE SCHEDULE

DATE	TOPIC	Readings (*NOTE: see links posted on LEARN)
Week 1 (Sept. 5)	<ul style="list-style-type: none"> •Introduction & Course overview •Assignment #1 explanation 	
Week 2 (Sept. 10, 12)	<ul style="list-style-type: none"> •Defining “Resources” & Resources Management •Technology & resource exploitation (<i>Southbound video</i>) 	
Week 3 (Sept. 17, 19)	<ul style="list-style-type: none"> •Goals & actors •Actors group exercise (discussion) 	3.1 Holling & Meffe 1996 3.2 Drew 2005 3.3 Sherry & Myers 2002 (Optional)
Week 4 Sept. 24, 26)	<ul style="list-style-type: none"> •Resource inventory: •Inventorying Alberta’s Grizzlies (YouTube video) https://www.youtube.com/watch?v=IU1o138fDdg •Restocking inventories: <i>The Wolves of Yellowstone Park</i> (video) + follow-up 	4.1 Morehouse & Boyce 2016 4.2 Ripple and Beschta 2012 4.3 Smith et. al. 2016 (optional) 4.4 https://open.alberta.ca/dataset/b834b694-8ab8-4fbf-aeb1-5963a6ebf3f3/resource/8a0b7999-a5cf-4242-8a46-2999a0fd0381/download/2014-Southwest-Alberta-Grizzly-Bear-Monitoring-Project-2011-07.pdf (optional)
Week 5 (Oct. 1, 3)	<ul style="list-style-type: none"> •Learning & Knowledge in RM •Management styles & frameworks 	5.1 Ludwig et. al. 1993 5.2 Armitage, Marschke & Plummer 2008
Week 6 (Oct.8, 10)	<ul style="list-style-type: none"> •Forecasting & visioning/backcasting •Forecasting group exercise (Delphi method) •TEST #1: Oct. 10 	6.1 UN World Water Assessment Programme 2012 6.2 Landeta et. al. 2011 http://www.sciencedirect.com/science/article/pii/S0040162511000618 6.3 Robinson et. al. 2011 http://www.sciencedirect.com/science/article/pii/S0040162511000035 (optional)
Week 7 (Oct.15, 17)	Reading Week – no class Assignment #2 Due Oct 19th, 11:59pm	
Week 8 (Oct.22, 24)	<ul style="list-style-type: none"> •Resource management challenges #1 (Complexity, uncertainty, turbulence, surprise, failure) •Responses: Knowledge from failure, adaptive management, and managing for resilience https://www.youtube.com/watch?v=HGihU-agsGY (13mins) 	8.1 Gunderson 2000 8.2 Odum, W.E. 1982 www.onlyoneplanet.com/Tyranny_of_small_decisions.doc 8.3 Allen et. al. 2011 (optional)
Week 9 (Oct. 29,31)	<ul style="list-style-type: none"> •Resource management challenges: #2 •Wastes/negative impacts https://www.youtube.com/watch?v=24UveHBWMIw (13mins) •Gold waste exercise •Spatial & temporal challenges 	9.1 Tayebi-Khorami et. al. 2019

Week 10 (Nov. 5, 7)	<ul style="list-style-type: none"> •Resource management in developing countries •Assignment #2 explanation •Resource management in developing countries (cont) 	10.1 Doberstein 2003
Week 11 (Nov. 12, 14)	<ul style="list-style-type: none"> •Resource management in unique regions (arctic & arid) •Oil on Ice DVD •Assignment #2: due Nov. 17, 11:59pm 	11.1 Eskeland and Flottorp 2006 www.ssb.no/a/english/publikasjoner/pdf/sa84_en/kap6.pdf 11.2 Corell 2006 11.3 Gov't of Nunavut (optional)
Week 12 (Nov. 19, 21)	<ul style="list-style-type: none"> •Public involvement & stewardship •Group exercise (nominal group technique) • Payments for Environmental Services (PES) 	12.1 City of Waterloo 12.2 Wunder 2005
Week 13 (Nov. 26, 28)	<ul style="list-style-type: none"> • Gasland DVD https://www.youtube.com/watch?v=6mp4ELXKv-w (90 mins) • Shale gas exploration & 'fracking' • course wrap up 	13.1 Cooper et. al. 2016
Week 14 (Dec. 3)	•TEST #2 (Dec. 3)	

Useful Resources & Tips:

Full text journal article searches

- <http://scholarsportal.info/>
- <http://www.sciencedirect.com/>
- <http://www.ingentaselect.com/>
- <http://scholar.google.com/>
- <http://www.scopus.com/scopus/home.url>
- <http://www.scirus.com/srsapp/>
- <http://www.jstor.org/search/> (very useful for older, non-electronic articles that have now been scanned)

General Internet Searches:

- To find *reports* on the web add 'PDF' to your search term (e.g. 'Wolf reintroduction yellowstone' + 'PDF')

Creating Posters

- <http://www.cgl.uwaterloo.ca/poster.html>
- <http://hsp.berkeley.edu/sites/default/files/ScientificPosters.pdf>
- <http://www.makesigns.com/tutorials/scientific-poster-parts.aspx>
- [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=16&cad=rja&uact=8&ved=2ahUKEwjOpfG7s6PkAhVnkuAKHX0eB38QFjAPegQIBxAC&url=https%3A%2F%2Fwww.yorks.ac.uk%2Fmedia%2Fcontent-assets%2File%2Fdt-documents%2FPowerPoint Poster 2017-ile.pdf&usq=AOvVaw0a1DEieEfwqd666A0pU6qm](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=16&cad=rja&uact=8&ved=2ahUKEwjOpfG7s6PkAhVnkuAKHX0eB38QFjAPegQIBxAC&url=https%3A%2F%2Fwww.yorks.ac.uk%2Fmedia%2Fcontent-assets%2File%2Fdt-documents%2FPowerPoint%20Poster%202017-ile.pdf&usq=AOvVaw0a1DEieEfwqd666A0pU6qm) (PDF)
- <http://abacus.bates.edu/~bpfohl/posters/>
- <http://www.youtube.com/watch?v=MqgigwlXadA> (YouTube video)