

**DEPARTMENT OF RENEWABLE RESOURCES
UNIVERSITY OF ALBERTA
REN 440/ RENR 732 - Disturbance Ecology
2016 Syllabus**

Instructor:	Nadir Erbilgin Canada Research Chair & Associate Professor in Forest Entomology Office: 2-30A ESB Tel: 780-492-8693 E-mail: erbilgin@ualberta.ca Office hours: By appointment only. To schedule an appointment, send email or call.		
Term	Fall		
Classes	MWF	9:00-9:50	GSB 859
Discussions	F (Sect 1)	9:00-9:50	T-183
	F (Sect 2)	10:00-10:50	T-183
Credits	3 credits		

Course Description

Disturbances are an integrated part of every habitat and occur at various temporal and spatial scales. The objective of this course is to present a broad array of topics related to the natural and anthropogenic disturbances occurring in both natural (aquatic or terrestrial), and altered/managed (agricultural fields, agroforestry, or tar sands) ecosystems. Students will analyze and discuss disturbances occurring in these environments and evaluate their impacts on the spatial and temporal patterns of ecosystems across landscape. They will examine the parallels and differences between natural and anthropogenic disturbances to better understand the contributions of humans to present disturbance regimes. Students will be active participants in the lectures and discussions, providing their thoughts and opinions throughout the semester.

This course is consisted of two main parts: In part 1, the students will be introduced to the disturbances occurring in different ecosystems (terrestrial, aquatic, anthropogenic habitats). This will be done in three ways: lectures given by the instructor and guest speakers, and discussion sessions. In part 2, students are expected to write four discussion and four lecture-summary papers, lead a group discussion paper, prepare a group term paper, and present a group lecture (40 min long) based on the topic of their group term paper.

Course Pre-Requisites and Co-Requisites

This course is suggested for students in either the Faculty of ALES or the Faculty of Science with an interest in Ecology, Conservation Biology, Forestry or Sustainable Ecosystem Management. Prerequisites: Third or fourth year standing and BIOL 208. The course is open to all types of graduate students.

Student Learning Outcomes and Competencies

Upon successful completion of this course students will be able to do the following.

- Identify major disturbance agents affecting terrestrial, aquatic, anthropogenic habitats in Alberta and Canada,
- Characterize their impacts on below and above ground ecosystem properties,
- Distinguish the impacts of natural disturbances from anthropogenic disturbances,
- Engage students in the course materials and resources in order to develop their understanding of the significance, importance, relevance, and value of disturbances for various ecosystems,
- Enable students to share their understanding and expertise with their classmates,
- Enable the instructor to evaluate students' understanding of key course concepts and correct misunderstandings.

References and Readings

Students are responsible for reading the references listed in the E-class.

E-Class

Our course material will be posted at <https://eclass.srv.ualberta.ca/>

Plagiarism and Cheating

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University. All students at the University of Alberta are subject to the Code of Student Behaviour, as outlined at:

<http://www.governance.ualberta.ca/en/CodesofConductandResidenceCommunityStandards/CodeofStudentBehaviour.aspx>. Please familiarize yourself with it and ensure that you do not participate in any inappropriate behavior as defined by the Code. Key components of the code include the following statements.

- 30.3.2(1) No Student shall submit the words, ideas, images or data of another person as the Student's own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.
- 30.3.2(2) c. No Student shall represent another's substantial editorial or compositional assistance on an assignment as the Student's own work."

Assignment must be completed and written by you and you alone. To be a plagiarist you need not copy all of the words of another author; rearrangement, dropping out words, or altering punctuation still count as plagiarism. Here are some examples:

Original text from Acorn (2007): "The black-billed magpie, *Pica hudsonia*, is a handsome and intelligent bird that is common in western Canada."

(a) Really obvious plagiarism: "The black-billed magpie is a handsome and intelligent bird that is common in western Canada."

(b) Slightly less obvious plagiarism: "The black-billed magpie, a handsome and intelligent bird, is common in western Canada."

Plagiarism is lazy and dishonest. Here are some ways to use a phrase you like without plagiarizing:

(a) Full sentence quotation: "Acorn (2007) says "the black-billed magpie, *Pica hudsonia*, is a handsome and intelligent bird that is common in western Canada", and I agree."

(b) Phrase quotation: "Although some describe the black-billed magpie as "handsome and intelligent" (Acorn 2007), I cannot agree."

Although quoting is honest, if you quote unnecessarily and excessively it suggests that you can't write anything yourself. Avoid excessive quotation. If you don't care about the phraseology, but need the information, use your own words but still cite the author as the provider of information:

Example: "Black-billed magpies (Corvidae: *Pica hudsonia*) are clever and attractive birds widespread in Alberta, Saskatchewan and Manitoba (Acorn 2007)."

Students should speak with the course instructor about any questions or concerns about the code. Students should be particularly aware of the code as it pertains to internet and library research, use of previous class notes, reclamation plans of former students and interviews or discussions with others.

Cell phone: NO Cell Phone Use (including but not limited to "texting", video, camera, games) during lecture.

Marking and Grading

This course has **no exams**, however students will be evaluated in a variety of ways throughout the semester and are expected to contribute and participate in this course from start to finish.

Due Dates: It is the student's responsibility to ensure that the assignment is completed efficiently, accurately, and on time. The assignments are to be submitted at their respective due dates mentioned above. Four discussion and four lecture summaries should be submitted on or before December 7. There is a penalty for all late assignments of 10% for every 24 hours (or part thereof) that it is late (e.g., a "perfect" paper received 10 days late would receive a zero).

Group Discussion (15% of Final Grade)

We will have 11 discussion sessions. The first will be led by the course instructor and the remaining 10 will be led by two students. Students are free to change their groups after discussing among themselves, but they should notify the instructor as soon as possible. The instructor already selected the title of the papers that will be discussed in each session based on the scope of the course. Students will responsible for

preparing questions or issues prior to the meeting in order to stimulate discussion. **A summary of the paper along with questions and issues will be submitted to the instructor in advance of the meeting.** Students should make suggestions as to group behaviour, such as not to digress from topic, keep the discussion on track, and encourage all members to participate. Even if you are not the designated person of a paper, you must read and strive to understand it. These discussions will help clarify difficult concepts, and are essential for placing certain ideas into a broader context. Names will be assigned in the first week of the course. Please note that each student will be evaluated independently based on their contributions before and during the discussion sessions.

Since class size does not allow having one discussion session (students benefit the most when discussions occur in smaller groups), instructor will divide the whole class in four groups (about 10 students each) and organize two discussion sessions (**Session 1: 9:00-9:50 & Session 2: 10:00-10:50**). Each session will hold two groups together (about 20 students in each session). Students in each group are expected to attend the weekly discussions in either Session 1 or 2. Every two weeks, one of four group will switch the other discussion session (e.g., group#1 will switch from Session 1 to 2) to allow student to know the members of other groups and improve their learning experience. Instructor will assign students in one of these four groups by September 4. If there is a conflict of schedule, instructor may revise the groups.

Term Paper (20% of Final Grade)

A group of three or four students will submit a term paper. Topic for the term paper can be anything from terrestrial, aquatic, anthropogenic habitats, with an emphasis on the impact of disturbances on a particular habitat or plant or animal species. The emphasis for this paper should be on **integration and synthesis**. Select a topic that may require you to survey the literature, form some sort of conclusions or viable group of possibilities, and support this view. The topic may range from a description to identification of a disturbance agent(s) (natural or anthropogenic) in a particular habitat. Choose a topic that will most benefit you as you search the literature. The length of the paper should be maximum 5 pages (single-spaced, 12 point of Times New Roman (Arial 11, or Tahoma 10), 2 cm margin).

It is expected that students in each group contribute equally to the various stages (topic development, investigations, discussion, and writing) of the paper. To make certain this happens, students in each group will be asked to fill out a form to evaluate the other (two or three) students in the same group. Instructor will seriously consider these evaluations when grading each student on the term paper. This means that students whose names on the same term paper could get different grades.

Each group must provide a **topic for the term paper by 25 September, rough draft by 23 October, and final submission by 7 December**. Each group is expected to hand the term paper in a regular class schedule before or on **7 December**. There is a penalty of 10 points per day for late papers, unless we have agreed to a later date due to personal emergency. The rough draft helps you to put together all your ideas on a research paper and then flesh them out. It should not be longer than 1-2 pages. I summarized the following instructions how to write a rough draft:

1. You should do a brief research on the topic of interest long enough and hard enough to generate as many ideas on the subject as you can. Consider which references you will cite in your final draft to support your subject. As you research, some ideas might pop up in your mind; note them down on a piece of paper immediately. This process is also known as brainstorming.
2. State your hypothesis or objective(s). This will be the main topic of your paper and you will frequently visit this main idea throughout your paper.
3. Identify relevant ideas (opinions) related to your topic. You do not need to concern with the overall flow of the paper just yet. The length of each ideas/opinions should be single paragraph or group of paragraphs in the final draft. Although you should consider writing complete sentences in the rough draft, you can use fragmented sentences (i.e., bullet format).
4. You will benefit from organizing your ideas (grouping together) based on their relevance when you are preparing your final paper.
5. When you list the similar ideas in a group, the structure of your paper will begin to emerge. At this juncture you will find that you might want to add more detail or delete what you think is superfluous or repetitive. Also, you should not be afraid of refining your hypothesis or objectives because, as you investigate, you will be more familiar with the ideas which might be different from those you began with.

6. The next step is to draw up an outline of your paper. This outline will help you to direct your research that you may be required to do before you actually get down to writing your essay.

The final paper should have the following sections:

Title Page: A short catchy title will help draw potential readers to your work. Also include your name date and number of words in the article.

Introduction: Your first task is to engage the reader by identifying the central phenomenon process or hypothesis around which the reported work is structured. Although any research paper may have relevance to multiple issues you should select one for the focus of your paper. Identify the field of science and the importance of the questions addressed before you even mention your selected research paper.

The paper: After setting the stage for why this is important research (above) now tell the reader what was done, how it was done and essentials of what was observed. Due to limited space you will be able to give only a brief synopsis of experimental methods (if necessary; otherwise experimental methods are optional). Discuss the significance of the work with respect of the large field of science (why this is an important contribution to ecology or forestry). Give your readers some perspective on the work. What can we expect next as a result of the research you reviewed?

Citations: Cite the paper(s) that is (are) the main subject of your article and any related papers mentioned. Use the citation format as in the journal of *Ecology*.

Paper Evaluation Criteria

1. Title (5 pts)

- A short, catchy title
- Also include, your name, date, and number of words in the article.

2. Introduction (25 pts)

- Is the central biological problem/issue clearly and engagingly introduced?
- Is the importance of the problem/issue clearly described?

3. Body of paper (45 pts)

- Is the study (methods, results) clearly and succinctly described?
- Are the conclusions appropriately critiqued and evaluated?
- Is the significance of this work for the broader fields of disturbance ecology highlighted?

4. Style, grammar and presentation (25 pts)

- Is the paper writing with clarity, economy and precision?
- Is proper grammar used?
- Are references properly cited?

In-class Group Presentations (15% of Final Grade)

Each group will prepare a 35-40 min-long oral presentation (plus 5 min Q/A) based on the content of their group term papers. Group presentations will be evaluated by the instructor and students. You may want to consider the following tips for your presentation:

- Know your topic - Do the research first and know your material. Think through what you will present before beginning the project on the computer. Creating the slide show is the easy part. The best presentations are created by people who are comfortable with what they are going to talk about.
- Use key phrases about your topic - Good presenters use key phrases and include only the most important information. Your topic may be vast, but choose only the top three or four points and emphasize them several times throughout the presentation in the classroom.
- Avoid using too much text on the slide - One of the biggest mistakes students make in classroom presentations, is in writing their whole speech on the slides. The slide show is meant to accompany your oral presentation. Write in the form of notes, called bullet points on slides. Use simple language and limit the number of bullets to three or four per slide. The surrounding space will make it easier to read.
- Limit the number of slides - Too many slides in a presentation will cause you to be rushing to get through them, and your audience might end up paying more attention to the changing slide than to what you are saying. On average, one slide per minute is about right in a classroom presentation.
- Layout of your slides is important - Make your slides easy to follow. Put the title at the top where your audience expects to find it. Phrases should read left to right and top to bottom. Keep important information near the top of the slide. Often the bottom portions of slides cannot be seen from the back rows because heads are in the way.

- Avoid fancy fonts - Choose a font that is simple and easy to read such as Arial, Times New Roman or Tahoma. You may have a really cool font on your computer, but save it for other uses. Don't use more than two different fonts – one for headings and another for content. Keep all fonts large enough (at least 20 pt and preferably 24 pt) so that people at the back of the classroom will be able to read them easily.
- Use contrasting colors for text and background - Dark text on a light background is best. This combination offers the most visibility. Sometimes though, you may want a dark background for effect, to dazzle the crowd. In that case, be sure to make text a light color for easy reading in a classroom presentation. Text is often difficult to read on patterned or textured backgrounds. Keep your color scheme consistent throughout your classroom presentation.
- Try a slide design template to keep the look consistent - When you use a design template, choose one that will not detract from your classroom presentation. Test it ahead of time to make sure that the text will be readable and the graphics won't get lost in the background.
- Use animation and transitions sparingly in your presentation - Let's face it. Students love to apply animations and transitions every place they can. This will certainly be entertaining, but rarely will the audience be paying attention to the message of the presentation. Apply animations to graphics to make a point, not to entertain. Using preset animation schemes will apply action to titles and bullet points, keeping the slide show consistent and interesting. Remember, the slide show is a visual aid and not the objective of the classroom presentation.

Oral presentation Evaluation Criteria

Delivery (30 pts)

- The presentation was organized appropriately (Background/Justification)
- The amount of material was appropriate for the time allotted
- Visual aids were used to enhance the presentation
- The presenter spoke clearly and to the audience (did not read PPT slides)
- The presenter was well informed regarding the research topic and successfully conveyed this knowledge to the audience

Content (60 pts)

- The presenter provided sufficient introduction to the research area
- The presenter offered convincing rationale for the research and provided specific objectives/goals
- The presenter offered well-thought-out hypotheses or questions
- Materials and methods were presented clearly and in detail (if applicable)
- Methods were justified/feasible for proposed hypothesis/question (if applicable)

Question Period (10 pts)

- The presenter was generally knowledgeable regarding the research area
- The presenter understood specific technical aspects of the research area
- The presenter understood the significance and limitations of their research area
- The presenter did an excellent job at justifying the research area

Discussion and Lecture Summaries (40% of Final Grade)

About 30% of your final grade will be based on a series of **four discussion** (discussions other than you presented) and **four lecture summaries** that you will prepare. These summaries should be maximum 2 pages each (single-spaced). You should review the content of the discussion or lecture topic, identify the major themes and links to other relevant material covered in the course to that point (including the lectures given by the instructor and guests). Writing style as well as content will be assessed. You can choose which discussion or lecture sessions you will prepare summaries for, but all summaries should be submitted before or on **December 7**. Each summary will be worth 5% of your final of grade (total 40% of your final grade). Please note that there is no reason to wait until the last moment to do these summaries! A sensible student will spread them out over the semester rather than waiting for the deadlines.

Lecture & Discussion Participation (10% of Final Grade)

My goal is not to have every student participate in the same way or at the same rate, however if only a few students participate by volunteering answers, asking questions, or contributing to discussions, lectures become to some extent a lost opportunity to assess and promote learning. Students should consider this class as an environment in which all participants have an equal opportunity to learn and in which the class explores issues and ideas in depth, from a variety of viewpoints. I will evaluate the frequency and quality of student contributions, as well as how effectively they each respond to others' comments. It is important to understand

that high participation marks are not awarded simply for talking a lot, but instead for making high quality comments/responses throughout the term. I will assign each student in one of the following three participation & attendance categories: **(0): Not attended, (1) attended, but not contributed, (2) attended and contributed. These will be sent to each student throughout the semester.**

Assignment	Due Date	Value
4 discussion summaries	throughout course	20% (4 x 5%)
4 lecture summaries	throughout course	20% (4 x 5%)
Term paper	Topic submission due 25 Sept; First draft due 23 Oct; Final draft due 7 Dec	20%
Oral presentation of term paper	Between 16 Nov and 7 Dec	15%
Discussion	Between Sept 11 and Nov 6	15%
Lecture participation & attendance	throughout course	10%
<i>Final distributions of grades are based neither on strict, absolute numerical scale (e.g., > 90% of total marks for a 4.0) nor on a strict "curve" (e.g., the top x% of students get a 4.0); rather, a combination of the two is used that considers historical averages for 400-level courses and natural breaks in the distribution of scores.</i>		

Day	Date	Lec No	Topic	Notes
F	Sept 2	Intro	Classes begin: Introduction and course overview	Introduction
M	Sept 5		Labour Day Holiday	NO CLASS
W	Sept 7	1	Lecture: Introduction to disturbance ecology	
F	Sept 9	Disc#1	Role of disturbances in natural communities by Wayne P. Sousa	Instructor (everyone attends)
M	Sept 12	2	Lecture: Disturbances in terrestrial habitats	
W	Sept 14	3	Invited Lecture: Fire	
F	Sept 16	Disc#2	Effects of disturbance on urban river food web by Edoardo Calizza et al.	
M	Sept 19	4	Lecture: Disturbances in aquatic habitats	
W	Sept 21	5	Invited Lecture: Agents of Disturbances: Biotic - Diseases	
F	Sept 23	Disc#3	Synthesizing the effects of land use on natural and managed landscapes by R Thackway & A Specht	Topic submission due
M	Sept 26	6	Lecture: Disturbances in anthropogenic habitats	
W	Sept 28	7	Invited Lecture: Invasion in aquatic systems	
F	Sept 30	Disc#4	Effects of natural resource development on the terrestrial biodiversity... by LA Venier	
M	Oct 3	8	Invited Lecture: Effects of mining operations on ecosystem	
W	Oct 5	9	Lecture: Ecosystem processes – Terrestrial systems	
F	Oct 7	Disc#5	Increases in disturbance and reductions in habitat size interact... by PG Jellyman et al.	
M	Oct 10		Thanksgiving break	NO CLASS
W	Oct 12	10	Lecture: Ecosystem processes – Aquatic systems	
F	Oct 14	Disc#6	Mountain pine beetle and forest carbon feedback to climate change by WA Kurz et al.	
M	Oct 17	11	Invited Lecture: Biodiversity and insects	
W	Oct 19	12	Biodiversity and invasives	
F	Oct 21	Disc#7	Restoration of heterogeneous disturbance regimes for the preservation...by SD Warren & R Buttner	Term paper preliminary draft due
M	Oct 24	13	Invited Lecture: Restoring disturbed lands	
W	Oct 26	14	Invited lecture: Remote sensing technologies to insects	I
F	Oct 28	Disc#8	Grazing increases below-ground biomass and net primary production... by L Lopez-Marsico et al.	
M	Oct 31	Disc#9	Limitations to the use of facilitation as a restoration tool in arid grazed by Z Noumi et al.	
W	Nov 2	Disc#10	If we build it, will they colonize? A test of the field of dreams paradigm ... by BR Wodika & SG Baer	
F	Nov 4	15	Invited lecture: Remote sensing technologies to detect fire	I
M	Nov 7-10		Fall Term Reading Week (Nov 7-10) & Remembrance Day(Nov 10)	NO CLASS
M	Nov 14	Disc#11	Climate change impacts adaptive capacity, and vulnerability of European forest... by M Lindner et al.	
W	Nov 16	1	Case Studies	
F	Nov 18	2	Case Studies	
M	Nov 21	3	Case Studies	
W	Nov 23	4	Case Studies	
F	Nov 25	5	Case Studies	
M	Nov 28	6	Case Studies	
W	Nov 30	7	Case Studies	
F	Dec 2	8	Case Studies	
M	Dec 5	9	Case Studies	
W	Dec 7	10	Case Studies	Term paper due