

Moravian College  
 Department of Biology  
 Senior Seminar (BIO 370/ENVR 370)  
***“Conservation Biology and Restoration Ecology”***

<u>Instructor</u>	<u>Phone</u>	<u>E-mail</u>	<u>Office</u>
Dr. Husic	610-625-7100	<a href="mailto:medwh03@moravian.edu">medwh03@moravian.edu</a>	Collier Science - Room 311B
<b>Office Hours:</b>	Mondays	10:00 -- 11:00 am; 2:00 - 3:00 pm	
	Wednesdays	11:00 am - noon	
	Thursdays	2:00 -- 3:00 pm	
<b>Class Meeting Times:</b>	W, F 8:55 - 10:05 301 PPHAC		
<b>Course Prerequisites:</b>	Senior status or permission of instructor		
<b>Required Textbook:</b>	McMillan, W.E. 2012. <u>Writing Papers in the Biological Sciences</u> . 5 <sup>th</sup> Edition. Bedford/St. Martin's		
	Primack, R.B. 2012. <u>A Primer of Conservation Biology</u> . 5 <sup>th</sup> Edition. Sinauer Associates, Inc. Publishers		
<b>Additional Required Reading:</b>	<i>You will also have several readings from journals, and various media and internet sources throughout the semester.</i>		

**Course Introduction and Description:**

In this course, students will discuss conservation strategies and threats associated with local, national, and global resources such as watersheds, forests, wildlife, and parks and preserved lands. Management of these resources is complicated by rapid development (loss of open space) and land use change, the spread of invasive species, the alteration or loss breeding, wintering, and stop-over habitats for migrating species of birds and butterflies, and climate change. There will also be a focus on issues related to biodiversity. Science is the basis for developing conservation strategies and management plans, but often, economics, politics, and social issues (population growth, poverty, protection of the rights of indigenous people and their cultures) present complications to implementation of these plans.

Students will be challenged to consider questions such as whether conservation is a privilege of wealthy nations, and whether the needs of people in underdeveloped nations should come before that of preservation of wilderness and wildlife. In order to address these difficult questions, we will read not only contemporary science and conservation primary sources, but also excerpts from historical and contemporary writings of naturalists and environmentalists as they try to determine the value of wildness, wilderness, and wildlife in our own lives.

We will also explore the role of ecological restoration in conservation through specific case studies. As with conservation biology, the theory and methods from a wide range of disciplines are used in the practice of ecological restoration in which professionals work to remediate sites that have been disturbed or polluted to

the point where the ecosystem is degraded or destroyed. Examples include reestablishing riparian zones and stream banks, reforestation, revegetating sites contaminated through mining and smelting operations, and reintroducing species that had been extirpated from an area or bolstering an endangered population.

A key question today is “To what extent can we reverse the damage caused by humans to Earth’s ecosystems and species?” Restoration debates have previously centered on the question of “restore to what” in terms of a desired outcome; there is often little agreement on what historical condition prior to disturbance should be used as a target. However, if predictions based on climate modeling come to fruition, these arguments will be meaningless. In many places, it will become impossible to look to predisturbance conditions due to changing regional climate, desertification, ocean acidification or sea level rise, and new species assemblages as compared to what once characterized a location in the past. In 2007, a position statement issued jointly by the Society for Ecological Restoration International and the Ecological Society of America called for a “global strategy for mitigating climate change” (for example, see [www.sciencedaily.com/releases/2007/08/070817165031.htm](http://www.sciencedaily.com/releases/2007/08/070817165031.htm)). In this release, it was noted that ecological restoration should be considered as one of the tools that can help in this mitigation.

**As part of this course, students will participate in a field trip to a local Superfund site undergoing restoration. (This will need to be at a time other than the scheduled class meeting time, most likely a Saturday.)**

To meet the writing intensive component of this course, students will be responsible for a number of writing assignments including journaling, op-ed assignments, reaction papers, abstracts and a major research paper. All students will be expected to give an oral formal presentation on a topic relevant to the course theme.

**Course Objectives:** Upon completion of this course the students will be able to:

- 1) describe important scientific issues in conservation and restoration through a variety of oral and written communication modes;
- 2) understand the interplay between science, economics, social values and priorities, and politics in conservation and restoration decisions;
- 3) thoroughly research a specific topic related to conservation biology or ecological restoration ~ using primary and secondary literature sources;
- 4) consider public responses/reactions to conservation science and priorities;
- 5) identify ethical issues associated with conservation;
- 6) concisely express a research topic in abstract form;
- 7) construct successful outlines and drafts of written work from peer and professor feedback;
- 8) complete a scientific research paper with appropriate scientific citations;
- 9) effectively discuss, explain, and critique primary literature and other readings through journal club sessions;
- 10) present their comprehensive research before peers and instructor using Power Point software as well as address questions regarding their work; and
- 11) be able to objectively critique peer abstract writing samples and ask questions during discussions and after student presentations.

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From: What Do You Care What Other People Think? (Concluding essay, "The Value of Science") by Richard Feynman, p. 245, 1988 (see: <http://laserstars.org/bio/Feynman.html> )

*"The scientist has a lot of experience with ignorance and doubt and uncertainty, and this experience is of very great importance, I think. When a scientist doesn't know the answer to a problem, he is ignorant. When he has a hunch as to what the result is, he is uncertain. And when he is pretty darn sure what the result is going to be, he is still in some doubt. We have found it of paramount importance that in order to progress we must recognize our ignorance and leave room for doubt. Scientific knowledge is a body of statements of varying degrees of certainty—some most unsure, some nearly sure, but none absolutely certain."*

The fields of conservation biology and ecological restoration, while having solid scientific foundations, are also fields filled with uncertainty due to the relative newness of the disciplines and practices, and the great complexity within nature. The public, which is skeptical of science, misunderstands the scientific process, and, to some extent, is scientifically illiterate, is nonetheless key in determining policy about the environmental priorities!

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**Grading:** The grading system is as follows: (+/- will be administered as professor deems appropriate)

A = 90 - 100 %  
 B = 80 - 89 %  
 C = 70 - 79 %  
 D = 60 - 69 %

**Course Requirements:** The student's grade will be based on the following:

- |   |                    |
|---|--------------------|
| • Miscellaneous assignments throughout the semester, including writing exercises and mini-presentations   | 300 points         |
| • Extent of participation in class discussions and quality of contributions   | 150 points         |
| • Substantially complete draft of research paper due 1 week prior prior to oral presentation  | 50 points          |
| • One written research paper  | 200 points         |
| • Abstract and primary articles submitted on time to the instructor in order for classmates to access/review  | 50 points          |
| • One research presentation and follow up question/answer session   | 200 points         |
| • Resume exercise   | 50 points          |
| • Overall class participation, engagement, & attendance (including asking questions of seminar speakers, and attendance at Convocation and at least one of the environmental films) | 100 points         |
| -----   |                    |
| <b>TOTAL</b>  | <b>1100 points</b> |

\*\* The "class participation aspects of the grade" are based on your participation and preparation for each class session. Therefore, excessive absences will have a negative effect on your final grade for the course.

\*\* Please note: it is within the instructor's purview to apply qualitative judgment in determining grades for assignments or the entire course.

**Expectations:**

- a) Attendance: Regular class attendance is expected. **No** make-up presentations will be permitted unless you have an acceptable reason (family emergency, illness, etc) – with documentation. If an emergency should arise, you must notify the instructor prior to the presentation date and **not** after. Notification from the Moravian College Health Center, Learning Services or the Moravian College Dean of Students' Office will be necessary if you miss more than two seminar classes. I will recognize legitimate excused absences such as when students are representing the university in an official capacity (e.g. for presentation at scientific meetings, intercollegiate athletic competition, but not practice, off-campus music performances, etc.). Such activities are scheduled ahead of time; thus, we expect you to make arrangements with us ahead of time as well. Please note: Students who arrive late to class disrupt the flow of the session and distract their peers. Please be prompt!
- b) Appropriate Literature Sources: All students will be required to understand the differences between primary and secondary literature sources. The college subscribes to many databases that you should be familiar with as they will be invaluable sources of information for your paper and seminar; “Web of Knowledge”, “Science Direct”, “SciFinder Scholar”, Academic Search Elite, and Nexis-Academic Universe are some examples. Public-domain internet sources can be helpful but you must critically evaluate the information obtained from such sources – especially if they are not primary sources. You should not typically use “Wikipedia” as a reference for assignments and material from this source is NOT acceptable for the formal research paper.

\*\*\*\* Throughout the semester, I would also like for you to pay attention to media and popular press coverage of topics related to this course. Online magazines, such as *Yale Environment 360*, *Science in the News*, and *Environmental News Network*, sites of non-profit organizations, several blogs (e.g. Dot Earth from the NY Times), etc. all have good material for class discussions. Your informed contributions to these discussions will be viewed favorably when assigning final grades! \*\*\*\*

- c) Reading Assignments : should be completed prior to each class session
- d) Writing Assignments : A rough draft of your final research paper is due to the instructor **one week** (preferably 10 days) prior to your presentation date. **Ten points will be deducted from your grade for every day it is late.** It will be evaluated and returned to you within one week of submission. An abstract of your presentation as well as 2 of your primary research articles are to be submitted to me one week prior to your presentation date. These will be placed in the student reading room (311 Collier). Your final research paper (~ 10 pages of text – excluding the title page, figures, and references) is due to the instructor **one week after the day you are scheduled to present your research topic. If it is not submitted on that day, 20 points will be deducted from the “research paper” grade for every day it is late.** You are each responsible for knowing the timeline for your assignments.
- e) Academic Honesty: Students are responsible for adhering to the College’s policy on academic honesty; Moravian College expects its students to perform their academic work honestly and fairly. A Moravian student, moreover, should neither hinder nor unfairly assist the efforts of other students to complete their work successfully. This policy of academic integrity is the foundation on which learning at Moravian is built. Students will be held to the highest standards as specified by the Moravian College Honor Code. Violations of this code will be handled in the most severe manner allowed by college policy. Please read the Academic Honesty Policy that is included in the student

handbook *and* the Guidelines for Honesty included in this syllabus. If you have any questions about plagiarism or other forms of academic dishonesty, please ask.

- All work that you submit or present as part of course assignments or requirements must be your original work. This includes any work presented, be it in written, oral, or electronic form or in any other technical or artistic medium. When you use the specific thoughts, ideas, writings, or expressions of another person, you must accompany each instance of use with some form of attribution to the source. Direct quotes from any source (including the Internet) must be placed in quotation marks (or otherwise marked appropriately) and accompanied by proper citation, following the preferred bibliographic conventions of your department or instructor. Student ignorance of bibliographic convention and citation procedures is not a valid excuse for having committed plagiarism.
- You may not use writing or research that is obtained from a “paper service” or that is purchased from any person or entity, unless you fully disclose such activity to the instructor and are given express permission.
- You may not use writing or research obtained from any other student previously or currently enrolled at Moravian or elsewhere or from the files of any student organization, such as fraternity or sorority files, unless you are expressly permitted to do so by the instructor.
- You may not collaborate during an in-class examination and you may not work with others on out-of-class assignments or projects unless expressly allowed or instructed to do so by the course instructor. If you have any reservations about your role in working on any out-of-class assignments, you must consult with your course instructor.
- Cheating or plagiarism will not be tolerated and may result in failure of the course. A major form of academic dishonesty is plagiarism, which we define as the use, whether deliberate or not, of any outside source without proper acknowledgment; an “outside source” is defined as any work (published or unpublished), composed, written, or created by any person other than the student who submitted the work (adapted from Napolitano vs. Princeton). Instructors often encourage—and in the case of research essays, require—students to include the ideas of others in their writing. In such cases, students must take care to cite the sources of these ideas correctly (in other words, to give credit where credit is due). Several assignments in this class will involve the use of internet resources, and it is my experience that students often do not realize that copyright violations and plagiarism policies still apply when using materials from these resources.
- At Moravian, if an instructor suspects that plagiarism has occurred, the student will be asked to show the notes and drafts contributing to the final version of a paper or assignment. The instructor also has the right to review any books or periodicals that were used. The grade for the paper will be suspended until these materials have been reviewed. An instructor who suspects a student of violating the policy on academic honesty with regard to an assignment, requirement, examination, test, or quiz will consult with another faculty member in the department using a blind copy of the work in question, to verify the violation. If the charge is verified, the instructor will, in almost all cases, assign either a grade of zero to the academic work in question or a failing grade in the course in which the violation occurred. The student must be informed in writing of the alleged violation and penalty; a copy of this memo must be sent to the Associate Dean of Academic Affairs.
- A student may appeal either a charge of academic dishonesty or a penalty as follows:
  - First, to the First Year Seminar course instructor.
  - Next, in the case of a First Year Seminar, to the Chair, First Year Seminar
  - Next, to the Academic Standards Committee, chaired by the Associate Dean for Academic Affairs.

- f) Extra Help : If any difficulties arise during this course in any area, including selecting a research topic to designing your presentation, please see me. *I will be happy to help!* The reference librarians in Reeves Library are also willing to assist you with reference materials. You may also contact the Moravian College Writing Center for further assistance in writing and revising your abstracts and research papers.
- g) Learning Services Office: Students who wish to request accommodations in this class for a disability should contact Elaine Mara, assistant director of learning services for academic and disability support at 1307 Main Street, or by calling 610-861-1510. Accommodations cannot be provided until authorization is received from the Academic Support Center.

*Best wishes for a great semester!*

*- D. Husic*

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 Senior Seminar (BIO/ENVR 370B)  
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 Fall 2012

**Tentative Class Schedule<sup>1</sup>**

<u>Date</u>	<u>Topic</u>
Aug. 29	Introduction and expectations for the course Review of syllabus and criteria for paper and oral presentation Selection of presentation dates Discussion on course themes: What is Conservation Biology? What is Ecological Restoration? How do these compare to/depend on Ecology, Environmentalism, and Sustainability? A bit of conservation history. Readings: Primack text, Chapter 1 McMillan text, introduction and Chapter 1.
Aug. 31	Discussion: Student identified stories/topics The Value of Story in Conservation Good environmental writing: Interview with Susan Cosier Introduction - searching the literature/citations/developing bibliographies; 1° and 2° sources
Sept. 5	Discussion: Assigned articles Writing a research paper vs. a review paper – finding examples of each Readings: Primack text, Chapter 2 McMillan text, Chapters 4 & 5
Sept. 7	<b>Tentative Topic for Seminar/Paper Due</b> Discussion: Topic TBD
Sept. 9	Discussion: Topic TBD
Sept. 12	Preparing drafts Creating Power Point presentations and posters
Sept. 13	<b>Convocation: Winona LaDuke (attendance mandatory)</b> <b>6<sup>th</sup> period – Winona LaDuke to meet with students</b>
Sept. 14	Discussion: Convocation talk; Conservation and Environmental Justice Introduction to abstract writing exercise/peer review
Sept. 19	Peer review of abstracts
Sept. 20 <sup>th</sup>	<b>Film: Green Fire – Leopold (7:00 p.m. UBC Room)</b>
Sept. 21	Discussion: Topic TBD
Sept. 26	<b>Outline for Presentation due by 5:00 pm</b> Discussion: Topic TBD
Sept. 28	Sample Power Point presentations by students/critiques
Sept. 29/30	<b>Migration Fest at the Lehigh Gap Nature Center</b>
Oct. 3	Sample Power Point presentations by students/critiques
Oct. 5	Discussion: Topic TBD

<sup>1</sup> Details on specific readings, assignments and class activities will be distributed in weekly or biweekly course outlines.

Oct. 10	Discussion: Topic TBD
Oct. 11	<b>Film: Living Downstream – Steingraber (7:00 pm UBC room)</b>
Oct. 12	Discussion: Topic TBD
Oct. 17	Presentations #1 & 2
Oct. 19	Resume writing session/Career Opportunities – Ms. Amy Saul, MC Career Center
Oct. 24	Presentations #3 & 4
Oct. 26	Presentations #5 & 6
Oct. 31	Presentations #7 & 8
Nov. 2	Presentation #9 & 10
Nov. 7	Presentation #11 & 12 <b>Film: Journey of the Universe (7:30 p.m. Dana Lecture Hall)</b>
Nov. 9	Presentations #13 & 14
Nov. 14	Presentations #15 & 16
Nov. 16	Presentations #17 & 18
Nov. 21 - 25	<b>Thanksgiving Holiday</b>
Nov. 26 – Dec. 3	Dr. Husic tentatively out of town for UN climate conference Writing Op-ed pieces
Dec. 5	Discussion: Updates from the U.N.F.C.C.C. (COP18)
Dec. 7	Final Discussion: Resume critiquing Day Course Debriefing
Dec. 10th	<b>Final Exam Period (Monday, December 10<sup>th</sup>, 1:30 – 4:30 p.m.)</b>



## Timeline and Important Suggestions for Writing Your Research Papers

### Timeline:

- Topic due to Dr. Husic on **September 7<sup>th</sup>** at the beginning of class.
- The focus of your paper and talk should be on some area of contemporary life science research. I expect you to focus on specific research studies (primary literature) but you should also include commentary on the impact of this research (its significance) and why it is controversial – either within the scientific community or amongst the general public. I would expect you to also discuss your personal thoughts on why you chose this topic and whether you think the controversy is justified or not.
- Outline for seminar and paper due to Dr. Husic on **September 21<sup>st</sup>** by 5:00 pm.
- Rough draft of your paper due one week prior to presentation date (preferably 10 days before the presentation to give me time to get comments back to you).
- Abstract and copy of one of your primary articles due to professor to be placed in student room in Collier (311) by 5:00 pm one week prior to presentation date.
- All class members are to review speakers abstract and article and draft 1 to 2 questions for speaker – in writing and in advance of the presentation. These will be collected after each seminar along with any questions that you think of during the talk.
- Final paper is due on day of your presentation! If you would like, you can write an addendum to your paper based on questions and feedback you get from the class during your oral presentation. This will be due one week after your presentation.

### Expectations:

- Your research paper and oral presentation are to be **a review and analysis** of scientific research projects reported by various scientists on your topic – do not give a summary of only one research paper. As noted above, include discussion on the broader impact of the research.
- You are expected to cite a minimum of **three *primary scientific papers*** and **two *secondary references***.
- You are to submit copies (or links to full text online articles) of all primary literature ***sources*** with the rough draft of your paper.
- Your primary article to be shared with the class should not be from work published prior to 2005.
- Any figures or images should be attached at the end of the - 10 pages of text (with appropriate legends) – do not place in the body of your paper. The figures should be numbered and have titles and, if taken

from some source, this should be noted. Technically, you should have permission to use figures from published sources (including the internet).

- Please visit the Writing Center if you are having difficulties in composing your final draft.

### Grading Criteria for Research Paper:

Clarity of writing	Quality of writing (grammar, punctuation, etc)
Ability to summarize research information	Appropriate detail/content/depth
Correct interpretation of data and information	Correct use of key terms
Original content or analysis	Appropriate References

### Timeline and Important Suggestions for Oral Presentations

#### Timeline:

- Same as for paper (see previous page).

#### Expectations:

- See attached seminar evaluation sheet to get a sense of what your peers and I will be evaluating you on.
- Oral presentations must include a Power Point slide show which will be submitted to Dr. Husic on the day of your presentation.
- Oral presentations should be 30 minutes, leaving about 5 minutes for questions from your audience.
- Topic due to Dr. Husic on September 7<sup>th</sup> at the beginning of class. The topic for your paper and presentation is the same although the specific content of each may vary.
- Practice, practice, practice! This is the way to gain familiarity with your presentation content, to gain confidence and to diminish the dependence on reading your notes during your actual talk. When you practice – do so with your Power Point presentation projected so you can also practice pointing out key information on your slides.
- Remember the importance of appearance, poise, etc. during a professional presentation. Developing confidence and presenting yourself in a professional manner will go far in helping you during interviews, future presentations for your career, etc.

## **Environmental Film Series Fall 2012**

*Refreshments and an opportunity for discussion will follow each film.*

### **Green Fire: Aldo Leopold and a Land Ethic for our Time** **Thursday, September 20 at 7:00 PM in the UBC Room**

The first full-length documentary film ever made about legendary environmentalist Aldo Leopold, GREEN FIRE highlights Leopold's extraordinary career, tracing how he shaped and influenced the modern environmental movement. Leopold remains relevant today, inspiring projects all over the country that connect people and land. *Sponsored by the Moravian College Environmental Studies & Sciences Program through a grant from the Margaret A. Cargill Foundation.* Check out the trailer at: <http://vimeo.com/8669977>

### **Living Downstream** **Thursday, October 11 at 7:00 PM in the UBC Room.**

(Sandra Steingraber will be our speaker for the incoming first-year students.) Based on the acclaimed book by ecologist and cancer survivor Sandra Steingraber, Ph.D., LIVING DOWNSTREAM is an eloquent and cinematic documentary film. This poetic film follows Sandra during one pivotal year as she travels across North America, working to break the silence about cancer and its environmental links. After a routine cancer screening, Sandra receives some worrying results and is thrust into a period of medical uncertainty. Thus, we begin two journeys with Sandra: her private struggles with cancer and her public quest to bring attention to the urgent human rights issue of cancer prevention. But Sandra is not the only one who is on a journey—the chemicals against which she is fighting are also on the move. We follow these invisible toxins as they migrate to some of the most beautiful places in North America. We see how these chemicals enter our bodies and how, once inside, scientists believe they may be working to cause cancer. *Sponsored by the Moravian College Environmental Studies & Sciences Program through a grant from the Margaret A. Cargill Foundation.* Check out the trailer at: <http://www.livingdownstream.com/trailer>.

### **Journey of the Universe (with guest speakers: M. E. Tucker and John Grim)** **Wednesday, November 7 at 7:30 PM in Dana Lecture Hall**

JOURNEY OF THE UNIVERSE presents for the first time the epic story of cosmic, Earth, and human transformation. Beautifully filmed on the Greek island of Samos, this engaging narrative combines scientific discoveries in astronomy, geology, biology, and ecology with humanistic insights concerning the nature of the cosmos. *These speakers and the film viewing are sponsored by the Religion Department, Seminary, and Arts & Lectures.* Check out the trailer at: <http://www.journeyoftheuniverse.org/film-trailer/>

BIOL 370/ENVR 370 Senior Seminar  
Fall 2012  
Dr. D. W. Husic

**Academic Integrity:** Absolute academic integrity and honesty is expected in all of my courses. Penalties for copying, plagiarism, data fabrication, or other types of cheating will not be tolerated and students caught violating the attached policy provisions will be dealt with severely. This can include failure for a test or assignment or a failing grade for the entire course. I have the right to report any and all violations of academic integrity to the appropriate campus administrators.

Each student enrolled in my classes is required to read and sign off on the Academic Honesty Policy information contained within the syllabus. Please read the policy and return the signed form (below) before the end of the week. I will keep these signed forms on file in my office.

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I have read the “Academic Honesty Policy” included in the syllabus for Professor Husic’s Senior Seminar (fall semester, 2012). I understand the policy and the consequences of engaging in academic dishonesty.

Name: \_\_\_\_\_

Date: \_\_\_\_\_