NCLC 311: THE MYSTERIES OF MIGRATION:
CONSEQUENCES FOR CONSERVATION POLICIES

New Century College
George Mason University
Tues, Thurs 1:30-4:10
Rob B 108
Fall 2015

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DESCRIPTION AND OBJECTIVES:

This learning community is designed to provide opportunities for students to discover and understand the intersection of public policy with the complex biological interactions that occur in the natural world. We do this through the little understood but extremely prevalent phenomenon of migration. Our learning goals are addressed through a myriad of learning community features ranging from informal science practice to case study development, writing and group work. This course is suitable for students interested in natural history and progressive teaching practice.

This learning community will investigate the exciting and, in some cases, mysterious phenomenon of migration—from butterflies to polar bears. In the past, scientists thought birds flew to the moon or buried themselves in the mud until spring. Although we no longer believe these ideas, mystery still surrounds some aspects of migration. Every year, monarch butterflies arrive at their ancestral wintering grounds in Mexico even though none have ever been there before. And hammerhead sharks converge in the Galapagos in large groups for reasons poorly understood.

Our focus will be on the basic biological and physical factors that influence migration—such as energy metabolism, behavioral adaptations, population genetics, terrain, weather patterns, and magnetism—and the implications of migration for the development of conservation and resource management policies both within the United States and with other nations. For educators, this is an opportunity to learn how to use a natural history phenomenon to raise the interest level of students and make the subject interesting and real. Our primary goal is two-fold: (1) to provide students with a solid understanding of basic biological principles by studying their application to one of the most pervasive and interesting phenomena in nature, and (2) to learn about and evaluate the domestic and international policy systems and tools for addressing problems and issues raised by the movement of plants and animals. A secondary goal is to enhance the students' awareness of the historical and cultural importance of migration through introducing a variety of readings, including science and policy articles and nature writing. Examples of questions to be investigated include: Why do organisms migrate? How do they know "where to go"? What factors affect the timing of migration? What problems does migration pose for resource management and conservation efforts, domestically and internationally? Are the institutions and mechanisms we currently depend on to protect migrating species effective?

Upon completion of the course, each member of the learning community should be able to:

1. Describe the biological parameters associated with migration, including behavioral and physiological components, and discuss their significance when developing conservation policy.
2. Provide several examples of important migratory issues and assess the effectiveness of our public policy system in addressing scientific uncertainties and value conflicts associated with each issue.
3. Discuss the roles of the major governmental and nongovernmental actors and institutions responsible for handling migratory issues in local, state, national and international arenas.
4. List the major policy tools available for dealing with migration issues, evaluate their strengths and weaknesses, and provide examples of their use.
5. Demonstrate the capacity to synthesize and integrate key facts and ideas from the learning community through the quality of a semester long case study, directed questions, and other activities.
6. Have an understanding of how to develop lesson plans focused on informal science education and inquiry based education.
7. Use sound research practice to discover information, discriminate, and create media resources through a collaborative group effort focused on a common theme.
8. Communicate interesting, relevant, accurate information to a specific audience that might include the general public, a K-12 audience or a Non Government Organization

Instructors: Dr. Thomas Wood has led the development of learning communities in Conservation Studies in NCC since 1996. He developed and implemented the Smithsonian Mason Semester resident program at the Smithsonian Conservation Biology Institute in Front Royal. He is Senior Associate on the National Science Foundation project

SENCER (Science and Engineering for New Civic Engagement and Reform) for which this course is a national learning community model. He is Director of Environmental Studies on the Piedmont. Additional staff from Environmental Studies, and Mason faculty will occasionally assist.

COURSE STRUCTURE:

A learning community is comprised of a group of scholars (in this case, students, faculty and course visitors), who come together to inquire, to investigate, and to construct knowledge about a topic of interest. We intend for this learning community to be characterized by openness and respect; collaboration; experiences linking the classroom to places, events and people outside the university setting; and group and individual learning. To meet these goals, students must be active, informed participants. All of us must read and thoroughly consider the reading assignments for each week *before* coming to class and take responsibility for making connections and sharing ideas.

Examples of activities: The following types of activities will provide opportunities for students to achieve course and personal learning objectives:

- participating in seminar discussions, which includes presenting current events and leading discussion;
- observing migration in the field (bird banding at Environmental Studies on the Piedmont);
- keeping a course journal for class notes, reading notes and, field notes;
- reading and critiquing scholarly books, journal articles, and other materials on migration, including perspectives from science, public policy and literature;
- using the Internet and other tools to elaborate and clarify classroom discussions, track migration reports, conduct research on international treaties, and gather data for projects;
- conduct research for group projects and an associated individual research paper

NCC COMPETENCIES AND PORTFOLIOS:

This learning community provides at least one or more opportunities to improve in each of the following NCC competencies: critical thinking, effective citizenship, social interaction, communication, global perspective, problem-solving, valuing, and aesthetic response. Your course journals should reflect your own assessment of the progress you have made in each of these areas. A separate handout will help guide development of your course portfolio.

READINGS: Suggested texts

1. Dingle, Hugh. 1996. *Migration: The Biology of Life on the Move.* New York: Oxford University Press. A new version of this book will come out in September 2014.
2. Buck, Susan J. 2006. *Understanding Environmental Administration and Law.* 3rd ed. Washington, DC: Island Press.
3. J. Salzman and B.H. Thompson. 2010. *Environmental Law and Policy*. 3rd ed New York, Foundation Press.
4. N.J. Vig and M.E. Kraft. 2016. *Environmental Policy: New Directions for the Twenty-First Century.* 9th ed. Washington, DC: CQ Press.
5. Cox, George W. 2010. *Bird Migration and Global Change*. Washington, DC: Island Press.
6. Additional readings periodically posted on BlackBoard
7. Current newspapers (e.g., Washington Post, New York Times, Wall Street Journal) and scholarly journals related to science and/or conservation policies (e.g., Science, Nature, Conservation Biology, Issues in Science and Technology, Journal of Public Policy Analysis and Management, Policy Studies Review, The Auk, Public Administration Review, Natural Resources Journal etc.).

COURSE REQUIREMENTS:

1. **Experiential Learning (fieldtrips):** This course contains 2 built-in credits of experiential learning, which means that each student is required to participate in out of class experiences in order to fulfill this component of the course. We have built experiential learning into this course because we believe that direct, hands-on experiences are imperative to a better understanding of how science and public policy must work together to address migration issues. You may fulfill these requirements through visits to an NGO to do interviews, by visiting environmental studies to experience bird banding, or by organizing local trips to witness migration in our area. You will be required to submit an "experiential learning" plan for approval. You will be required to carefully chronicle your experiences in your journal.

2. **Course Journal:** Each student must keep a course journal for seminar notes, reading notes, and field notes throughout the course. There are two components to your journal, the first I call "front line" and the second component is "reflective". See separate handouts for details on what and how to write in your journals. We will discuss this in detail early in the course.

3. **Participation:** Students must be active participants in all aspects of the seminar, field trip activities, and group work. Participation will be assessed over the entire semester and can take many forms, e.g., participating in a seminar discussion, asking questions, listening carefully to another student, organizing your experiential learning, etc. You should also stay up-to-date on current events and developments by reading and bringing in popular literature (magazine, newspaper articles, etc.) relevant to the course. This exercise should generate interesting class discussions that will aid in your understanding of the practical and real-world context of course topics.

4. **Group Case Study Project:** This assignment is to be a well researched, professionally presented group case study of a public policy issue involving migration or an informal science education plan. This project will have several components—a preliminary research plan with annotated bibliography, a draft, and the revised/final project.

5. **Individual Research Paper:** Each student will complete an individual research paper on a topic related to his or her group project. This paper will be completed in three stages—a proposal, a preliminary draft, and a revised final paper. You will be provided with helpful resources to assist your research and writing.

6. **Discussion Questions and In-class Assessments:** Periodically you will be assigned directed questions about the previous or upcoming week's readings, course discussions or field activities. Students must prepare and submit written responses, and bring them to seminar. Students will also be expected to bring written questions that respond to their classmates' assigned journal articles on the day of presentations. In-class, students will also be asked, periodically, to provide written responses to readings, seminar discussions, and current events. These writing activities will be used to promote learning through awareness.

7. **Examinations:** Throughout the semester, students will help the faculty develop a set of study topics from which the mid-term and final exam questions will be drawn. These will be essay or short answer and may cover any aspect of the course, from scholarly readings to learning in the field. These exams are designed to promote deeper thinking, and not memorization.

8. **Course Portfolio:** Each student will prepare a course portfolio, documenting his or her progress toward specific seminar learning goals and toward NCC competencies. The portfolio is your primary vehicle for reflecting on the course, demonstrating the connections you make through this course, and setting future goals for yourself.

9. **Course and Peer Evaluations:** In order to help the instructors improve the quality of this learning community for the future, students must complete the NCC course evaluation. The instructors will not review these until grades have been assigned. In addition, each student must complete an evaluation for each member of his or her group. If a student does not complete these two assignments, his or her grade will be recorded as an Incomplete until the evaluations are completed.

GRADING AND COURSE POLICIES:

1. **Grades:** The quality of your work and your contribution to the development of the course throughout the semester will be very important in our final assessment of your performance. In the first class session, periodically throughout the course, and through handouts, we will explain the criteria we use in evaluating each of these components. Final grades to be awarded are A or A- (Excellent); B+, B, or B- (Very Good); C+ or C (Satisfactory); C- or D (Poor); and F (Unsatisfactory/Fail). Please ask us if you have any questions about how we are evaluating your performance. The following formula shows the points we give to each component and whether or not the points are based on Individual (I) or Group (G) work:

	Points (Total = 1000)
Participation	200
In-class and field trips	
Case Study Project	300
Research Paper	200
Exams - formative and summative	100
Course Portfolio	200
Reflection writings and evidence of learning	
"Do Now" Experience	
Directed Questions	

2. **Completing work:** All course requirements and assignments are due on the dates noted on the class schedule or on the date assigned by the instructor. Late papers will be penalized for each late day. Always keep one copy of your papers for your own records, since it is your responsibility to replace any paper or assignment that is misplaced or lost. Additional time to complete assignments and incomplete grades will be considered for extraordinary circumstances.

3. **Attendance:** The learning community format works best if all of us contribute. Thus, the grading components listed above reward you for cooperative and collaborative participation in field trips, and class. In addition, you are responsible for all announcements, assignments, and date changes made in class, via GMU email or BlackBoard, and for all material covered in class even if you are not there. A word to the wise--research on the relationship between class attendance and grades for college students has consistently found a strong positive correlation.

4. **Academic misconduct:** The University's integrity is in large part ensured by the individual choices made by each of us. **GMU's Honor Code**, which you have agreed to uphold, has clear guidelines regarding academic integrity. Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask for clarification. No grade is important enough to justify academic misconduct. If you feel unusual pressure or anxiety about your grade in this or any other course, please talk with us or to a trusted friend or counselor to get your situation in perspective. The University provides a range of service to help with test anxiety, writing skills, study skills, and other related concerns.

5. **Commitment to diversity:** New Century College is an *intentionally* inclusive community that celebrates diversity and strives to have faculty, staff and students who reflect the diversity of our plural society. We do not discriminate on the basis of race, class, linguistic background, religion, gender identity, sex, sexual orientation, ethnicity, age, or physical ability.

6. **Writing Center**: A114 Robinson Hall; (703) 993-1200; http://writingcenter.gmu.edu

7. **Learning Support:** Office of disability services: http://ods.gmu.edu

8. **University Libraries**: "Ask a Librarian" http://library.gmu.edu/ask
   Christal Ferrance cferranc@gmu.edu 993-5815

9. **University Policies**:
   The University Catalog, http://catalog.gmu.edu, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at http://universitypolicy.gmu.edu/. All members of the university community are responsible for knowing and following established policies.

If you have any questions not answered in this syllabus or have any concerns during the course, please feel free to contact me at any point during the course.

NCLC 311

THE MYSTERIES OF MIGRATION

This outline is a general schedule of topics to be covered in class. The daily schedule is subject to change depending upon progress with course objectives. If you are attending class regularly, you will know how to prepare for each session. This document will be updated via BlackBoard as the course progresses.

Course Schedule

Experiential Learning

There are two credits of Experiential Learning embedded in this course. In this course, this means hands-on exploration and research activities. You will have the rare opportunity to be introduced to a working bird banding station where active research is being conducted on migratory birds. In addition, you can pursue the opportunity to develop informal science education for K-12 students. Banding days are subject to inclement weather, so there will be some flexibility in dates you can attend.

Bird Banding dates for Environmental Studies on the Piedmont (Warrenton VA) Start times will be announced as we move into the later day lengths. Generally you will need to plan to arrive at 7:15. We would like to have about 5 of you each day so it does not get too crowded. A list of available banding days will be provided after the first class.

WEEK 1:

Sept 1: ***Course Introduction***
Course Syllabus and overview of learning objectives
Daily course activities, current events and directed questions
Faculty and Student Expectations (Understanding Learning)
Field Trip/ Experiential Learning Logistics
"Do Now" introduction to Social Media
Environmental Studies on the Piedmont. http://envstudies.org
Winged migration

Sept 3: Presentation and Discussion: How People Learn: Why learning communities facilitate learning
Library Research Presentation**:** Christal Ferrance (cferranc@gmu.edu 993-5815)
Portfolio Directed Question: Student Learning expectations (500 words) for your portfolio
Establish an understanding of why migration is important for the natural world

WEEK 2:

Sept 8: ***What is migration, why is it important as a natural history phenomenon?***
Discussion: Definition of migration and related terms, why does it matter how we define migration? How is it studied? Introduction lecture.

DUE: Do Now Topics: Review topics for submission to KQED
Suggested Readings: Dingle, Chapters 1-4
Due: student expectations learning essay

Sept 10: **Case Study Practice Day:** ***Migration and Public Policy: Pebble Mine in Alaska***
Frontline Film & Discussion:
Practice case study groups discussion
Assigned: Portfolio Directed question TBD

WEEK 3:

Sept 15: **Do Now submissions completed: Submit to KQED in class by group**

American Public Policy Process Short Lecture and discussion http://www.fws.gov/laws/
Background Readings: Buck, Susan J. *Understanding Environmental Administration and Law,* Chapters 1-3

Sept 17: ***Group Case Study Ideas:*** *You will spend this period working with your groups to research case study ideas. They should be well developed this day. Topics discussed*
Assigned: Portfolio Directed Question: Research your case study ideas to prepare to compose an Issue Statement next week

WEEK 4:

Sept 22: ***Climate Change : NOVA video "Earth from Space"***
Discussion: How does climate change potentially play a role in your case study? How are you going to find out if it is important?
Suggested Readings: Dingle, Chapter 5

Sept 24: ***Group work day: Case Study development***
Goal: Put together a comprehensive Issue Statement with input from all.
Assigned: Case Study Research progress reflection for portfolio

WEEK 5:

Sept 29: Take home exam 1 assigned

Oct 1: **Case Studies:** Divide up Individual Research Paper Topics, done in agreement with your group.

WEEK 6:

Oct 6: **Due**; Individual Research Paper Proposal Outline (Comprehensive Outline with 20-30 primary references, inserted in outline and annotated, most should be peer reviewed)

Oct 8: ***Domestic Policy Making for Migratory Issues***
Readings: Buck, Susan J., *Understanding Environmental Administration and Law,* Chapters 4, 5, 6.

WEEK 7:

Oct 13: *No Class Monday classes meet this day….*

Oct 15: **Written Research Paper due: Bring copies for each member of your group**

WEEK 8:

Oct 20: ***International Policy-Making for Migratory Issues***
Readings: Buck, Susan J., *Understanding Environmental Administration and Law,* Chapter 7. United Nations Environment Program (UNEP): review this website http://www.unep.org/

Oct 22: ***Physiological conditions influencing migration.***
Readings: Dingle, Chapter 6
Migratory Bird Treat Act of 1918: read the US Fish and Wildlife service summary (also skim through the text of the act in the US Code by clicking the title link): http://laws.fws.gov/lawsdigest/migtrea.html

Due: Revised Draft from Peer Review

WEEK 9:

Oct 27: ***Biological constraints on migration***
Readings: Dingle, Chapter 7 & 8

Oct 29: **Second draft of research paper due (from peer review)**
Adjustment day: Additional mini lectures and as needed.

WEEK 10:

Nov 3: ***Neotropical Migrants – Seasonal migrants***
Readings: Dingle Chapter 9
Migratory Bird Treaties: see US Fish and Wildlife Service webpage, read the summaries of at least 2 of the bird treaties: http://laws.fws.gov/lawsdigest/treaty.html

Nov 5: **Adjustment time for discussion and group work**

WEEK 11:

Nov 10: ***Variation in migration***
Readings: Dingle, Chapter 10-12

Nov 12: **Adjustment day: Mini lectures as needed, group work time.**
Due: Final Individual Papers

WEEK 12:

Nov 17 ***Integrating Science and Policy for Decision making and Conservation implications.***
Readings: Dingle, Chapters 15-17

Nov 19

Case Study Preparation in class this day
Take home late-term exam posted

WEEK 13:

Nov 24: **Late- term exam – take -home due**

Nov 26: **Thanksgiving Break**

WEEK 14:

Dec 1: **Case Study Preparation**

Dec 3: **Case Study Preparation**

WEEK 15:

Dec 8: **Case Study Presentations**

Dec 10: **Case Study Presentations**

Finals Week:

Dec 15: **Portfolios Due**