

BIOL 650 SEMINAR IN CONSERVATION GENETICS AND GENOMICS

SPRING 2016 INSTRUCTOR: SHEDLOCK

TIME: 6 PM-7:30 PM MONDAY

LOCATION: ROOM H206 Hollings Marine Lab, Fort Johnson

PROVISIONAL SCHEDULE OF PAPER PRESENTATIONS:

Week 1 – Jan 11 Introductions, goals, organizational matters

ML King Holiday No Class

Week 3 – Jan 25 A Primer of Population Genetics and Genomics Applications
[*intro lecture to get everybody on the same page with basic concepts and methods*]

Week 4 – Feb 1 Wasser, PNAS / Ishengoma Cons Genet [*genetic tracking of elephant ivory, elephant genomics and conservation, socioeconomics of the elephant crisis*]

Week 5 – Feb 8 Miller, PNAS / Edwards, Curr Bio [*polar bear genomics, conservation, policy, challenges of managing hybridization*]

Week 6 – Feb 15 Gilbert, PNAS / Poinar, Sci [*the mammoth genome, cloning and endangered species recovery programs, ethics*]

Week 7 – Feb 22 Bono, Molec Ecol / Shapiro, BMC Genomics [*the genomic editing explosion; CRISPR critters & de-extinction*]

Week 8 – Feb 29 Moura et al ME & MBE / Isaac, PLoS One [*cetacean population genomics and environmental change*]

Spring Break No Class

Week 10 – Mar 14 Bowen, Mol Ecol / Shamblin, MEPS [*sea turtle conservation genetics and genomics, setting conservation priorities*]

Week 11 – Mar 21 Fitzpatrick, PNAS [*salamander population genetics, tracking gene flow between endangered and invasive species, commercial land use and environmental law*]

Week 12 – Mar 28 Laikre, TREE [*large scale release of plants and animals, artificial enhancement of populations, transplant experiments, genetically modified organisms*]
[possible lead by Mike Denson, SC DNR]

Week 13 – Apr 4 Hauser, PNAS [*population genetic structure and management in commercial pelagic fishes, fisheries regulation*]

Week 14 – Apr 11 Yoder, PNAS / Sebastien, Molec Ecol [*Madagascar biodiversity hotspot and integrated conservation strategies*]

Week 15 – Apr 18 Class party SUCCESS STORIES and discussion (with rituals)

Overview of format for the weekly discussions:

- All papers will be assigned cooperatively during the first week of the course.
- All PDF files of papers will be available via shared Dropbox folder
- Supplemental information and updated literature on the same topic are encouraged under the umbrella of each weekly theme. Alternate primary papers will be considered by the Instructor based only on exceptional interest in an area in which a student is actively pursuing conservation research and its appropriateness for the theme and goals of the course.
- Students should plan on presenting an introduction and overview of the paper to prime the group discussion using Powerpoint slides and the whiteboard. Students should plan to devote approx 15-20 minutes to presenting a detailed overview of their paper. Supplemental materials can be distributed via the shared Dropbox folder prior to each weekly class meeting.
- The number of weeks we do additional presentations depends on the number of students participating in the class. The Instructor may do additional presentations if the group is small.

Learning Outcomes:

- Learn how to develop an in-depth appreciation for the primary literature from a diversity of case studies employing genetic analysis and new methods of genome analysis aimed at basic research in biodiversity studies and applied problem solving in the environmental sciences.
- Learn how to cultivate a literacy in the use of next-generation genomics-enabled research design, analysis and implementation
- Learn how to hone critical and synthetic thinking, integrative research strategies and communication skills for leading discussions and presenting in-depth critical summaries of published scientific investigations
- Learn how to build a skill set for conducting informed discussion and debate regarding major issues and new developments in the modern integrative field of conservation biology.

Assessment:

The course grade is based 100% on attendance and participation. This includes conscientious contributions to presenting the readings and engaging actively and thoughtfully in discussions and adding new relevant supportive reference materials to the cumulative course bibliography of shared resources. Individual substantive participation will be noted weekly (50% of grade). Individual oral presentation and leadership of weekly discussion (50% of grade)

Grading Scale:

Grade A = Student accurately, conscientiously, and consistently assimilates material covered by assigned readings, presentations, and group discussions and communicates this material effectively for at least 90% of the weekly class activities.

Grade B = As above for 80-90% of the weekly class activities.

Grade C = As above for 60-80% of the weekly class activities.

Grade F = As above for less than 60% of the weekly class activities.