

Islands, Sustainability, Ecology and Culture Through Time: The Process of Change in Science



Instructors:

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Lecture times: W/F 10:00 - 11:50 am **ACB 238**
 Laboratory time: F 12 – 4pm **THH 209**
 See below for dates when labs/field trips are scheduled.

REQUIRED TEXT:

The Fifth Beginning, What Six Million Years of Human History Can Tell Us About Our Future by Robert Kelly, 2016. (online \$15; or at USC Bookstore)

Fortunato, *et al.* 2018. Science of Science. *Science* 359, eaao0185 (2018)

Merchants of Doubt (DVD) Directed by Robert Kenner.

Naomi Oreskes & Erik M. Conway. (2010). Defeating the merchants of doubt. *Nature*, 465(7299), 686-7

Other readings from primary literature will be provided through Blackboard.

FIELD TRIPS:

- 1 – California Science Center (independent peer group work)
- 2 -- Catalina: **Mandatory, multi-day field trip: September 14-16th**
 A multi-day trip to Santa Catalina/Pimu Island--one of the Channel Islands located off the coast of Los Angeles--is a centerpiece of this class. Other field trips will take place on Fridays during scheduled class times.
- 3 -- Natural History Museum
- 4 – White Point kelp, intertidal and survey archaeology
- 5 – La Brea Tar Pits

Important schedule note: if we are on a field trip, **we will end at that location by 4pm.** So, please allot up to 1 ½ hours travel time before the next event on your Friday schedule. Check dates in syllabus for field trips. We are not able to make special travel arrangements for those who choose to leave early for other events.

COURSE OVERVIEW

Islands are home to roughly 600 million people—or about 10% of the world’s population. Cultural and biological developments have abounded on islands since earliest times, and provide us with laboratories in which to investigate evolution, ecology, colonization, sustainability, and other concepts critical to understanding our world and ourselves at all times and scales, both on planet Earth and on the other outposts of our Solar System that we aim to explore.

The discovery and settlement of Earth’s islands is one of the most fascinating stories in human history. Unique cultures, economies, beliefs and medicines develop on islands, while numerous animal and plant species live only on islands or in the soil and sands formed there. Islands can serve as buffers against natural disasters including storms and disease, and they can be threatened by climate change and resource depletion, leading us to wonder whether islands are bell weathers for the future of mainland ecosystems.

If we consider Captain Cook’s voyages to Tahiti to chart the transit of Venus; or Darwin’s fascination with the flora and fauna of the Galapagos Islands that led to his insights into evolution; or Swift’s tale of Robinson Caruso (based on an actual incident); or Disney’s new fantasy “Moana,”; we understand that islands have long captured our imaginations, both scientific and romantic. We are prompted to think creatively about islands as a lens for viewing natural processes and human experiences of the past, present and future.

This course outlines the benefits of ecosystems and how human or other species interactions alter existing ecosystems. Through activities, reading, structured discussions, and field trips that focus primarily on Catalina Island, we will explore specific ecological concepts of islands and how colonization of islands by people alters island ecology. This class will be an integrated blend of the fields of archaeology and island ecology. You will be introduced to how these two fields provide insight into how humans impact ecology of sensitive ecological communities found on islands. The class will also help you become conversant with the language that ecologists and archaeologists use, the issues and questions these scientists tackle, and methods used to study impacts.

COURSE OBJECTIVES:

As a result of fully participating in this course, students will be able to

- Gain an understanding of the processes of change in science
- Become familiar with ecological and cultural processes, theories, and current questions as specifically related to islands
- Pose ecological and cultural research questions related to select topics
- Be able to analyze data statistically to answer research questions
- Gain practice with scientific writing, oral presentations and video authoring

Specific learning objectives of the course. Students will:

- 1) Articulate (via written and oral means) the causes and consequences of anthropogenic disturbances on ecosystems and biodiversity
- 2) Critically interpret scientific literature
- 3) Demonstrate an understanding of ethical conduct in science and research
- 4) Gain a critical perspective on the development of scientific thought
- 5) Develop an understanding of the nature of collaboration, networks, funding, and the structures underlying science research

Grades in this course are computed based on your performance on these tasks worth a total of 500 points.

CLASS CITIZENSHIP: 50 points

Full credit (50 points) is obtained if you regularly show up in class on time, ready to participate having done the reading for the day before arriving, avoid using screens for activities unrelated to class content, and are helpful in creating a positive intellectual community, which occurs by reflecting on readings, asking questions. interacting in small groups, taking responsibility for your learning and facilitating learning by others (e.g., you share notes for an absent class member; you talk to 3 other students about what you missed in a class session prior to asking the instructors); and by responding in open class discussions)

JOURNAL: 50 points

5 points for each journal assignment during the first 10 weeks of the semester (10 assignments). Your journal may be typed online or a handwritten, scanned journal entry. To count for credit, post your journal entry each week prior to Friday at 5pm to your personal Google Doc folder (accessible only to a single individual student and the professors). Late postings of journal entries will not be awarded credit for that week unless accompanied by a copy of written acceptance of instructor of an allowed excuse. It is each student’s responsibility to post this permission along with their late entry. Pro tip: post early...by Wednesday. The length of each journal entry should be sufficient to reflect on these questions every week:

What did I hope or expect to happen in this class or with my assignments for this class this week?

What, in fact, actually occurred?

How did my work/life balance contribute to this result?

What group or individual dynamics (communication, collaboration, cooperation, competition, combativeness, kindness) among class members did I experience this week?

MIDTERM EXAM: 100 points

Scheduled during class period on Wednesday October 10th 10-11:50am. May include all material from lectures, activities, and field work

FINAL EXAM: 100 points December 10th in our regular classroom.

TERM RESEARCH PROJECT: 100 points

An extended explanation of this project is located in a separate handout. You will track the process of change in science and present this as a written abstract, a video made with freely available software, and a short oral summary presentation for your video at the end of class. You will encounter many of the skills that will help you create a strong term project in the information literacy sessions with Instructional Librarians and through your class pre-work assignments. NO prior technical expertise is expected of students to succeed in this assignment.

CLASS PRE-WORK: 100 points -- 10 assignments x 10 points each (due dates in Schedule below)

These assignments build toward your Term Research Project or relate to field trips taken in this class. Important note about class pre-work: Some of the skills needed to succeed in the Term Project will be developed by completing the class pre-work assignments. For example, you will learn how to track and visualize networks of ideas and people in science through citation searches, and you will practice editing text, audio voice-over, and images into a short video made with freely available software.

SCHEDULE

Classes are followed by the initials of the lead professor for that class.

DATE	ACTIVITY	PRE-CLASS PREP
W Aug 22 10-11:50	Session 1: Introduction to the course and to ethics of science (LD/KH)	No pre-work; LD ppt
F Aug 24 10-11:50	Session 2: Introduction to the scientific method (hypothesis driven research) as used in natural and cultural systems (LD/KH) (seriation [artifacts]; dating)	Reading 1 is in Kelly= <i>The Fifth Beginning</i> (pp. 1-10) Journal 1

W Aug 29 10-11:50	Session 3a: Earth during the Anthropocene: our island home (LD/KH) Session 3b: Term Project Workshop: Information Literacy 1: Elizabeth Galoozis; USC Libraries	BRING YOUR LAPTOP TO CLASS Class pre-work 1: Science and Searches
F Aug 31 10-11:50	Session 4: Introduction to Islands and their change over time (KH)	Reading 2 (KH) Journal 2
W Sep 05 10-11:50	Session 5a: The peopling of the globe, the kelp highway hypothesis and Finding Nemo: (LD) Session 5b: Term Project Workshop: Information Literacy 2a and b: Kevin Klipfel: USC Libraries	BRING YOUR LAPTOP TO CLASS Class pre-work 2: Topic Hunting (Google Scholar); answer survey
F Sep 07 10-4	Independent peer work at California Science Center. Complete the worksheet and take & post images from your visit.	Reading 3: Chapter 2 Kelly pp. 11-19 Handout: free video options Journal 3
W Sep 12 10-11:50	Session 6a: Introduction to Catalina Island's marine and terrestrial environment (KH) -----continued on next page----- - Session 6b: Term Project Workshop: Information Literacy 3: Troubleshooting Workshop (on your results) Kevin Klipfel: USC Libraries	BRING YOUR LAPTOP TO CLASS Class pre-work 3: Web of Science Treasure Hunt
F Sep 14 FR 1p through Sep 16 at 5pm	3 day field trip to Catalina Island. Departure FRIDAY from UPC at 1PM. Return SUNDAY by 5pm (LD/KH) MANDATORY	Reading 4: Catalina reading on Blackboard; Maps Post Journal 4 by Friday; post Journal 5 by Sunday at 11am
W Sep 19 10-11:50	Lecture 7: The concept of island biogeography and the colonization of islands (KH)	Class pre-work 4: Forge Onward opportunity: drop-in hours and email consults with Kevin/Elizabeth
F Sep 21 10-11:50	Lecture 8: Merchants of Doubt (LD)	Reading 5: <i>Science of Science</i> Journal 6
W Sep 26 10-11:50	Lecture 9: The importance of biodiversity, shifting baselines and extinctions (KH)	Reading 6: Knowlton and Jackson
F Sep 28	Day to work on independent project	Journal 7
W Oct 03 10-11:50	Lecture 10: Making sense of human systems, settlement and culture – changing models and perspectives (LD)	Class pre-work 6: Showing Off your Data (1 min video with prelim visualization of results)

F Oct 05 10-4	Field Trip: White's Point (KH/LD) (tidal and archaeology survey)	Reading 7: Historical info on White's Point Journal 8
W Oct 10 10-11:50	MIDTERM (All material from lectures, activities, and field work) (KH)	
F Oct 12 10-4	Lecture 11: Case studies of endemic species and human interactions. Urban islands in Los Angeles. (KH) Field trip: Natural History Museum behind the scenes tour with curators and discussion of the study of biological and cultural diversity from collections. (KH)	Reading 8: Cougars in LA Journal 9
W Oct 17 10-11:50	Lecture 12: Distinctive lifeways : oceanic and coastal island adaptations (LD)	Class pre-work 7 Peer review of other students' 1 min video Reading 9: Kelly, pp. 36-57
F Oct 19	No class (time replaced by field trips); online assignment	Reading 10: Kelly, pp. 58-77. Journal 10
W Oct 24 10-11:50	Lecture 13: Special challenges for cultural heritage and cultural resources faced by islands and coastal regions from climate change (LD)	Class pre-work 8: Online Assignment for Term Project Keep working and ask for help and clarification on drafts
F Oct 26	No class (time replaced by field trips); online assignment	Reading 11: Kelly, pp. 59-78
W Oct 31 10-11:50	Lecture 14: Scientific inquiry into human experience in the past: possibilities and limits; and ethical considerations (LD)	class pre-work 9: Assignment for Term Project
F Nov 2 10-4	Field trip: La Brea Tar Pits (LD) Behind the scenes and excavation tour with curators and discussion of the study of biological and cultural diversity from collection. Session 15: Alexis Mychajliw (lecture)/Emily Lindsey	Reading 12: Kelly, pp. 78-99 self-drive (departure estimate 10am; arrive at museum front lobby by 11am); bring lunch. Done by 4pm at La Brea Tar Pits
W Nov 7 10-11:50	Lecture 16: The nature of science in change (LD)	Class pre-work 10: Assignment for Term Project
F Nov 9 10-11:50	Lecture 17: The science behind protected areas (KH)	Reading 12: Kelly, pg. 100-122
W Nov 14 10-11:50	Lecture 18: Special challenges for conservation faced by islands from climate change (KH)	Peer review of rough video draft; Online Assignment for Term Project
F Nov 16 10-11:50	Lecture 19: An introduction to the value of molecular approaches for studying ecology and anthropology (KH)	Class pre-prep and homework: revise and edit videos prior to submission.
W Nov 21 F Nov 23	THANKSGIVING HOLIDAY THANKSGIVING HOLIDAY	No classes
W Nov 28 10-11:50	Student presentations (LD/KH)	10am-11:50am

F Nov 30 10am-4pm	Student presentations (LD/KH)	10am to 4pm; bring your lunch.
MON Dec 10	FINAL EXAM 8:00am to 10:00am	THH 209

COURSE POLICIES

Exams

Exams may include multiple choice questions, fill-in answers, definitions, T/F, short answers, and short or long essays. Material will be drawn from lectures, readings, and/or field trips.

Policy on Re-grading Examinations

If you feel that an error was made in the grading of an examination, you need to do the following: 1) Check the posted answer key 2) Prepare a printed statement explaining why you feel your grade was incorrect, and 3) submit this along with your original examination within one week of the time the exam was returned. Your entire exam may be re-graded and, as a result, your grade may increase or decrease from a requested re-grade. No frivolous reasons will be accepted for requesting grade changes; stated reasons for a grade change must be legitimate (e.g., error in totaling the score).

Policy on missed lecture exams, assignments, or field trips

UNPLANNED ABSENCES: You may be excused from exams or labs only in the event of a documented illness or emergency as outlined by university policy or approved religious holiday (SCampus; policy.usc.edu/student/scampus/). If you miss a class, exam or graded activity due to medical illness you must present a valid medical excuse within 48h of the missed examination or quiz. The reason for missing an examination or quiz must be of a medical nature or totally unavoidable (e.g., a verified automobile collision on the day and time of the examination). An invalid excuse, or the excuse turned in late, will result in a score of zero for the activity missed. If you miss the final examination and have provided a valid medical excuse within 72 hours of the examination time, a final course grade of incomplete (IN) will be recorded and you will be permitted to make-up missed work during the following semester.

PLANNED ABSENCES: Students who wish to miss an examination for observance of a religious holy day should be aware of the University's policy on such absences, published at: <http://orl.usc.edu/religiouslife/holydays/absences.html>. Requests for such absences should be made by email at least 2 weeks in advance of the absence. If the absence is approved, a reasonable accommodation will be provided.

Field Trip Attendance Policy

The Catalina Island field trips will take place on Friday Sept 14th through Sunday, September 16th. We are unable to reschedule this trip, and no make-ups will be given. Other field trips happen during the scheduled Friday time slot. Field Trip Absences will fall into three categories as described below:

USC-Excused: Status will be granted as defined by USC policy (SCampus; policy.usc.edu/student/scampus/).

Non-USC-excused: Status will be granted on a case-by-case basis by the course instructors for absences not due to a USC approved reason. Please submit your requests for this status as soon as possible VIA EMAIL TO BOTH INSTRUCTORS but no later than 36 hours prior to the bus departure time.

Unexcused: all other absences.

If you miss a field trip for an USC-excused reason your field trip points will be prorated. If you have a Non-USC-excused absence you will be unable to earn the points associated with the work done in the field, but in some cases you will be allowed to complete the post-trip work using the data collected in the field. If you have an unexcused absence you will receive a zero for both the field trip points and the post field trip points. Please note that missing the bus/boat is NOT a valid excuse. The bus will leave with or without you at the predetermined time.

Participation/Lab Attendance: You are required to attend, and be on time for, all field trips. Points will be deducted from your participation grade for tardiness (3 pts/incident) or absence, any violation of safety rules, non-scholarly behavior, inability to contribute fully to group projects, poor effort, etc.

Students with Disabilities

Students requesting academic accommodations based on a disability are required to register with the Office of Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Be sure that the letter is delivered to the Laboratory Manager as early in the semester as possible, preferably by September 6, 2013. DSP is located in STU 301 and is open from 8:30 a.m. to 5:00 p.m., Monday through Friday. The telephone number of DSP is 213-740-0776. If a student's approved accommodation is limited to extra time on examinations, the teaching staff of BISC 120 will provide the accommodation. For any other accommodation, such as a private room, translator, etc., students must make prior arrangements with the DSP office 2 weeks before the exam date. For more information please visit the following website: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html.

Statement on Academic Integrity

Ethics of academic integrity is a primary focus of the course. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00: <http://web-app.usc.edu/scampus/1100-behavior-violating-university-standards-and-appropriate-sanctions/>, while the recommended sanctions are located in Appendix A. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>. It is a violation of academic integrity to either use someone else's clicker in the classroom to assist that person in gaining points, or lend your assigned clicker to another student.

Website

Postings on Blackboard (<https://blackboard.usc.edu>) will be an official source for announcements, course materials, lecture notes, grade postings and general discussions. Answers to students' frequently asked questions regarding this course can be found on Blackboard (<https://blackboard.usc.edu>) under Course Information. We may also use Blackboard for lecture or laboratory quizzes. Students are responsible for checking the course website on a regular basis.

Communication

Students are responsible for frequently checking class Blackboard account and their USC email accounts. Due to the complex nature of planning and executing field tips and laboratory exercises, it may become necessary for the course instructors to make changes to the published schedule. Students are responsible for any information sent to their USC email accounts by the course instructors.