THE AUSTRALIA PROJECT:
TROPICAL REEFS AND RAINFORESTS
Summer 2016
July 2-August 14

ACADEMIC SYLLABUS

Faculty:
Instructor: Matthew Zylstra, PhD.

Contact Hours: We will all be in close contact, meeting every day throughout the course. There will be a number of "check-in days" where we will schedule student-faculty meetings. If you would like to have a meeting outside of those times, you can certainly make an appointment or find an appropriate available time, and we will be happy to oblige.

Class Meetings: This Wildlands Studies Project involves seven days per week of instruction and field research, with little time off during the program. Faculty and staff work directly with students 6-10+ hours a day and are available for tutorials and coursework discussion before and after scheduled activities. Typically, scheduled activities each day begin at 8am, with breaks for meals. Most evenings include scheduled activities, including guest lectures, structured study time, and workshops. When at a field site, our activities may start as early as 5 am or end as late as 10 pm (e.g. for dawn/dusk wildlife observation). Flexibility is necessary to accommodate a variety of class times which maximize learning opportunities.

Course Credit: Students enrolled in Wildlands Studies Projects receive credit for three undergraduate courses. These three courses have distinct objectives and descriptions, and we integrate teaching and learning through both formal learning situations (i.e. lectures and seminars) and field surveys. Academic credit is provided by Western Washington University. Extended descriptions follow in the course description section of this syllabus.

1. **ESCI 497T, Environmental Wildlands Studies (5 quarter credits)** – Field study of environmental problems affecting the natural and human-impacted ecosystems of our study region, including the role of human interactions.
2. **ESCI 497U, Environmental Field Survey (5 quarter credits)** – In this field-based course we conduct on-site examinations and analyses of environmental problems affecting wildlands and wildlife in our study region.
3. **ESCI 497V, Wildlands Environment and Culture (5 quarter credits)** – Field studies course involving on-site research in our field location, studying the relationships among cultural groups and the environment. Using region- and culture-specific case studies, students assess historical and current cultural and environmental uses of wildland and/or wildlife communities. Course examines outcomes of environmental policies and wildland/wildlife management, including both sociological and natural consequences.

Readings: A Course Reader is established for this project and will be provided to students in advance of the project. Readings include selections from academic primary literature, technical reports, book chapters, and environmental impact assessments and planning documents. Field guides and textbooks supplement our field activities and are an integral part of our project. We will carry a shared reference library of these on all activities and backcountry trips.

Contents of this syllabus:

I. Project Overview

The Wet Tropics of northern Australia are home to some of the most unique and ancient terrestrial and marine biodiversity found on earth. From quirky wildlife such as marsupials and monotremes to the highest concentrations of primitive flowering plant families in the world, the Wet Tropics are a store of endemic, rare and threatened flora and fauna. It is for these reasons and more that much of this diverse region has been listed as a World Heritage Area (WHA) – which in turn borders another famed WHA and one of the seven wonders of the natural world: the Great Barrier Reef. As the world's largest coral reef system, the coastal waters of the Wet Tropics sustain biodiversity found nowhere else on the planet.

These areas are intimately tied to human history and present-day use. As the world's oldest surviving culture, the Aboriginal people have long interacted with these land- and seascapes in fascinating ways. Much of these ties and the ability to continue to steward the land have been severed through colonization, discriminatory policy and the ensuing changes. The region has since been utilized for mining, forestry, agriculture, fishing and, nowadays, a lucrative (eco) tourism economy. All these factors have resulted in an ecologically and culturally fragmented landscape, which faces persistent environmental pressures. This has led to a range of responses in the form of innovative scientific research, management measures, protected areas, stakeholder collaborations and Indigenous/co-management initiatives which seek to preserve the rich values of the area.

As a team, we will explore and study the flora and fauna in diverse habitats ranging from the plateaus and tablelands, savannah grasslands, eucalyptus forests, tropical rainforest, to the coastal mangroves and coral reefs. Team members will take part in firsthand investigations of these ecosystems, the species they support, the people who depend on them, and the conservation challenges they face today. We will immerse ourselves in the fascinating natural history and biogeography of this large island-continent as well as examine the cultural and socio-economic history of the region. We will discuss traditional and contemporary conservation strategies and the threats they seek to alleviate, such as land clearing and the impacts of introduced exotic species. We will become familiar with field survey and management approaches which aim to protect and conserve flora and fauna.

As we gain familiarity with these ecosystems, we will carry out field assessments with scientific researchers examining species interactions, patterns of diversity, and behavior. During the project, we will examine how both biophysical and human history has played a defining role in the evolution, survival, and success of the unique flora and fauna of north Queensland (known as the 'Wet Tropics'). Additionally, with local community members, as well as land and protected area managers, we will examine the history of land use, ownership, and conservation and learn about the role of the Aboriginal peoples in sustaining the landscape and their spiritual ties with it.

During our travels, we will speak and listen to various stakeholders in an effort to understand the diverse and sometimes conflicting perspectives to conservation. In examining various approaches to conservation, we will attempt to understand what has worked, what has not, and why. Through on-site field studies and research projects, participants will have unique learning opportunities to assess major opportunities and challenges affecting biodiversity conservation and sustainable human communities in Australia today. Furthermore, the project provides a rare opportunity to interact with like-minded peers, explore new horizons and develop personal talents in the sphere of conservation and sustainability.

II. Learning Objectives

Following this project, students should have working knowledge of and experience in:

1. ***The ecosystems of the Wet Tropics in terms of flora, fauna, and ecological processes, including threats, conservation, and change.*** Species identification is essential to managing and understanding the communities in this region and for identifying any change over time. Through a series of lectures, workshops, and journal assignments students will learn techniques for keying out and confirming identification of plant and animal species using field guides and taxonomic keys. In a series of field excursions, lectures, readings and discussions, students will learn basic ecological concepts, be able to identify community types and the processes that underlie community development and change.

2. ***The cultural, political, and management history within the Wet Tropics, including Indigenous and settler perspectives, policies governing use (federal, state, local), and local community involvement.*** Following introductory lectures on the cultural, political and management history in the Wet Tropics region, students will have the chance to meet many local residents who may have very different perspectives on sustainability, management, and policy. We will stay with Aboriginal groups who have a long association with the land. Students gain additional insight into the political and management history through discussions and numerous readings (focused on during the second half of the project).

3. ***Designing a field research project, collecting field data, managing, synthesizing, and presenting interpretations of this data to peers, faculty (and, where relevant, the public) both in writing and in presentation.*** Students gain significant experience in conducting research through a final field project that is the culmination of this course. Students are mentored through the research process by a faculty advisor, through workshops, and through working with a small group of their peers. The skills learned in this project are transferable to other fields (and to future careers): working well within a group, taking and using feedback, managing, synthesizing and interpreting information, presenting interpretations in oral presentation and in written form.

4. ***Critical reading, discussion, and evaluation of primary literature in natural and social sciences.*** Throughout this course, we rely on primary literature in lieu of a textbook; therefore, students gain a significant amount of experience reading and critically discussing primary literature. Students read primary literature most days, learning over time and with practice where to focus their attention to be able to critically evaluate the work. Most readings are debriefed with a group discussion, ensuring that students have understood the work and are able to critically evaluate it. By the end of the course, when students are well-practiced in reading primary literature, less time in discussion is devoted to comprehension and more discussion is devoted to critical evaluation.

5. ***Basic theoretical concepts such as wildness vs. wilderness, management vs. preservation/conservation, sustainable development and environmental sustainability, protected and Indigenous protected areas and the practical applications of these concepts in conservation and human experience.*** Students will gain knowledge and appreciation for the differences among these concepts and their usage in the popular and the primary literature. These concepts are frequently encountered throughout this course in readings, discussions, and visits with local experts. Issues surrounding their influence on conservation and management are discussed throughout the course.

6. ***Field observation skills, including methods for documenting and sharing findings in multiple formats.*** Field observation skills are an integral part of good science and promote awareness and understanding of the world. Through directed learning of ecology in the region, students will gain experience observing and connecting with their surroundings and become able to identify changing patterns and processes. Following an introduction to various techniques of recording and presenting information (e.g. natural history sketching, trip log and species account techniques), students will gain experience using a variety of techniques to present natural history observations.

7. ***Transdisciplinarity, complexity and holistic research approaches.*** Exploring and integrating 'different ways of knowing' (e.g. natural and social science disciplines, Indigenous/local and scientific knowledge, rational and intuitive insights) into research and practice. Understanding assumptions, beliefs and perceptions which shape contested realities.

These topics will be addressed through classroom lecture and discussion, course readings, field activities, visits with local experts, exposure to ongoing research, backcountry excursions, and field research projects. The course generally progresses from faculty-led instruction in the beginning (i.e. more lectures and readings) to student-led critical evaluation, analysis, and synthesis by the end of the course. Our overarching goal is for students to leave the course not only with extensive knowledge about this particular region, but also broader skills and understanding of natural and social sciences that allow students to critically evaluate information in other settings in their future lives and careers.

III. Course Descriptions

We teach these three courses in an integrated format in the field. However, students will receive transcript credit for the following three courses:

ESCI 497T, Environmental Wildlands Studies (5 quarter credits) – Field study of environmental challenges affecting ecosystems of far north Queensland, including the role of human interactions.

Experiences/Activities: Students will become familiar with the flora, fauna, ecology, geography and natural history of the Wet Tropics. Students will be instructed in methods of journal recording and critical reflection and will learn directly through observation and experience, as well as through guidebooks, lectures, stakeholder and community interaction, technical keys, and scientific and popular literature. Using principles of conservation ecology, the course will introduce conservation issues that face north Queensland, such as invasive species, land and coastal degradation, extreme weather events.

The course will explore the steps that state and federal governments and non-government agencies are taking to address and combat current issues through actions tied to ecological restoration and land management. Students will visit universities and research institutes to learn about current research trends. Students will participate in various projects led by researchers and/or land managers and will visit wildlife rehabilitation centers to further understanding of challenges and opportunities faced. They participate in conservation field research and evaluate environmental policy options, focusing on concepts, principles and the role of environmental research, wildlife management and conservation planning methods.

Students will complete an in-depth course-long field journal with detailed scientific observations, field inventories, analysis of environmental issues and the role of various stakeholders that they will interact with throughout the course. They will be required to participate in activities and discussions, sharing viewpoints and critiquing arguments or topics encountered. Debates, roundtables, role playing are some of the tools used to facilitate these processes. Additionally, students will be assigned readings from recent scientific literature and will be responsible for participating and leading seminar discussions.

Students will prepare a pre-assigned research topic that will address the natural or cultural history pertaining to a particular place scheduled to be visited. Students will give an oral presentation summarizing their paper for their peers.

Outcomes: Students must demonstrate knowledge of ecosystems, natural history, and flora and fauna of the Wet Tropics. Students will be able to critically analyze and reflect upon the relevance and significance of scientific research presented, conservation projects participated in, and wildlife centers visited. Across these diverse contexts, students will demonstrate their own process of learning through developing skills in field observation and documenting and sharing observations in multiple formats. Students will employ various techniques to present and record their observations including natural history sketching, narrative writing, and mapping.

Evaluation/Assessment:

Field Journal	60%
Oral Presentation	15%
Final Exam	15%
Participation and Discussions	10%

ESCI 497U, Environmental Field Survey (5 quarter credits) – Field studies course focusing on field survey methods and on-site biodiversity analysis and assessment as part of individual and group research on environmental issues.

Experiences/Activities: Students will be taught methods of field data collection, analysis and environmental report writing. Students will build species identification lists by using manuals, field guides and identification keys, which will be introduced in conjunction with taxonomic concepts. Students will be introduced to research projects and participate in related practical research-implementation efforts, such as biodiversity monitoring. Workshops and field activities will introduce methods of data collection and analysis. Students will design and complete a number of short independent scientific reports to capture their understanding of how field techniques may be applied in the field.

Students will be able to identify the key testable questions for a research project and identify what elements need to be measured to answer those questions. Students will discuss their results in light of current management or conservation issues and should be able to demonstrate how their results compare with or add to current knowledge of their study subject. Students should be able to demonstrate their understanding of the ecological and/or social science processes and concepts that underpin their research. Attention will be given to modes of presentation, evaluation and analysis, including formats for scientific writing and illustration.

Outcomes: Students will develop skills in field observation, data collection, and data interpretation. They will gain the ability to undertake field projects and be able to synthesize, organize, analyze and present final data in a way that is appropriate for peers and other interested researchers/stake holders. Students will be able to clearly describe what study they are carrying out, why they are carrying it out, what methods they are using, and what they expect to learn by conducting this study. Students will display competency using all tools provided them. Students will be able to discuss their results in light of current management or conservation issues to demonstrate how their results compare with or add to current knowledge of their study subject. Students will be able to demonstrate proficiency with keys, manuals and the methods, principles, analysis and applications of ecology and conservation biology.

Evaluation & Assessment: Demonstrate synthesized knowledge of field research, analysis, presentation and application.

Research Proposal (mid-term)	10%
Group Project	30%
Pop Quizzes	10%
Species Sightings List	25%
Final Exam	15%
Active Participation	10%

ESCI 497V, Wildlands Environment and Culture (5 quarter credits) – Field studies course studying the relationships among cultural groups and the environment. Using region- and culture-specific case studies, students assess historical and current cultural uses of land, ecosystems and biodiversity and related social-ecological consequences.

Experiences/Activities: Students will gain familiarity with the social-cultural dimensions of conservation issues in north Queensland. Aboriginal and European settler history, traditions and legacy will be explored throughout the course. Students will visit a number of culturally significant areas and explore case studies that examine the interplay between environmental issues and social-cultural wellbeing. Students will learn about the various ways that local (especially Aboriginal) communities are included (or excluded) in conservation and land management programs. Throughout the course, students maintain a local dictionary to familiarize themselves with local language, customs and colloquialisms. This course will incorporate lectures, talks from community representatives and visits to culturally significant field sites. Students will also be required to compose a paper on a topic of their choosing which incorporates their own experience and insight gained with the cultural dimensions of conservation in north Queensland. This may include reflection on key

issues, strategies, policies, successes and failures and of how communities (Aboriginal and European) have utilized, affected and interacted with their natural resources over time.

Outcomes: Students will become acutely aware of how social-cultural dimensions shape conservation and natural resource management in north Queensland. They will be responsible for reading relevant literature and present and lead seminar discussions. Students will participate in all activities, discussions and lectures and demonstrate proficiency in the cultural history of the region. They will reflect upon components on ESCI 497T and ESCI 497U across changing cultural contexts. Where appropriate, students will familiarize themselves with relevant Indigenous Ecological Knowledge (IEK). They will engage with local stakeholders and community members as required, to deepen understanding of the inter-linkages between cultural and natural histories and the tensions between ecological and economic objectives (e.g. mining, tourism).

Evaluation & Assessment:

Research Proposal (mid-term)	10%
Learning Journal	40%
Local Dictionary	10%
Final Reflection	15%
Final Exam	15%
Participation and Discussions	10%

IV. Assessment

The following is an overview of the academic requirements for the program. Some of the assignments are on-going (journal and readings) and some have specific dates (e.g. exams, projects, research papers). Due dates are subject to change in response to local environmental variables. Final grades will be based on the following items:

Course Number	Assessment Item	Date due	Percent of grade
ESCI 497T	Field Journal (Mid-term Review)	17th July	20%
	Field Journal (Final Review)	9th August	40%
	Oral Presentation	See Schedule	15%
	Final Exam	11th August	15%
	Active Participation (esp. in Group Discussions)	Entire Program	10%
ESCI 497U	Research Proposal (Mid-term Assessment)	20th July	10%
	Group Project	2nd June	30%
	Pop Quizzes (2)	At Random	10%
	Species Sightings List	9th August	25%
	Final Exam	11th August	15%
	Active Participation (esp. in Group Project Work)	Entire program	10%
ESCI 497V	Learning Journal (Mid-term Review)	17th July	10%
	Research Proposal (Mid-term Assessment)	20th July	10%
	Learning Journal (Final Review)	9th August	30%
	Local Dictionary	9th August	10%
	Final Exam	11th August	15%
	Final Reflection	12th August	15%
	Active Participation (esp. in Community/Group Dynamics)	Entire Program	10%

ESC I497T

Field Journal – 50%

The field journal is an integral part of the Australian Wildlands Studies program – it serves as a learning tool and an opportunity to closely attend to the environment, document and codify observations, and reflect on experiences. The field journal will be an ongoing assignment throughout the course. Several activities will be designed at the beginning of the course which will help outline what characterizes a thorough, well-written, detailed, observation-based field journal. We will focus on various techniques and styles for recording observations in the field journal.

The field journal will consist of natural history journal entries, based on both the Grinnell Method and other nature writing approaches which incorporate the student's personal experiences and observations (see Parker u.d. article). The focus of journal entries is a detailed record of observations from an explicit time period in a specific location written in a coherent, readable, and sometimes creative way. It is an in-depth descriptive natural history record. The journal uses different formats: silent observation in a single spot; an ongoing description along a prescribed route; a theme observed several times; a landscape description and the forces that influence it; a focus on relationships among species observed (food webs; other interactions); geological history as seen by the observer; and/or solely on what is encountered with the full and exacting use of the senses. The emphasis is therefore on the phenomena that the student actually senses and experiences, not on what they did, were told or read that day – even though parallels or comparisons may be drawn with this information.

Class notes and personal notes are not included as formal journal entries, although we do encourage students to take them, as they will be useful for other assignments or examinations. When journals are handed in for review, please clip or cover personal notes. Alternatively, put them in a separate (ungraded) field notebook. After an initial check early on, the field journal will be collected at two different times during the program: after 2-3 weeks and at the end. Field journals will consist of:

1) Grinnell Trip Logs – 35% *(6 entries from locations as prescribed by the instructors.)* This (adapted) Grinnell Trip Log format is a structured, descriptive, narrative record of field walks (not in table/grid format), consisting of the following elements:

1. **Date & Time:** Head your trip log entry with the date and the start and end time of your trip.	6. **Flora**: Descriptions of characteristic/notable vegetation seen, i.e. names and habit of plant and tree species, incl. interactions.
2. **Location**: Give the name of the area and the name of the hiking trail/route. Include start/end GPS coordinates if available.	7. **Fauna**: Record and description of sightings of any animals seen (incl. behavior) and/or evidence of their tracks, calls and signs.
3. **Weather**: Start/end conditions and notable weather changes, e.g. temperature, % cloud cover, wind speed, wind direction.	8. **General Commentary**: A brief personal summary reflection on the walk and/or other notable observations, e.g. geology, soils
4. **Route Description & Map**: Concise description of the route travelled, with distances, times, notable markers or changes in direction. On a left page, sketch **route map** with key features.	9. **Species Record & Sketches**: Descriptions of 3-5 species observed (e.g. flora, fauna, tracks, signs).Use field guides to support observations. On left page, sketch species and label well.
5. **Habitat(s)**: Description of the area's ecology, general vegetation type and changes in habitat, including ecotones.	10. **Two Questions**: Conclude with two detailed questions about ecological phenomena encountered that got you wondering.

This log is a careful summary of observations and field notes taken throughout the day. This entry usually takes 1-2 hours to write-up, but can take longer depending on the day of record. All entries must include the 10 elements as outlined above.

Grinnell Trip Log entries will be graded according to:

- *Organization:* Entries must be written in an organized way and should follow a logical format that remains consistent with the established criteria. Information should be accessible and related to specific dates and locations.
- *Completeness:* Includes the essential elements of a field journal and the prescribed entries have been completed.
- *Accuracy of Content*: Provides an accurate and comprehensive reflection of phenomena encountered during the trip (e.g. correct orientation information and habitats and species encountered).
- *Neatness/Readability*: Other readers should be able to easily use your journal as a reference.
- *Effort:* The entries show that serious attention/effort has been invested and improved throughout the program.

2) Nature writing – 10% *(From six locations as prescribed by the instructors.)*

These entries involve deeper and more creative reflection and require students to focus in on the ecological aspects of their sensory experiences. Entries should be inspired by and related to the specific place, and will be graded according to:

- *Language & Expression:* Employing rich language (e.g. word choice, metaphor, simile, alliteration, onomatopoeia) and/or a diversity of creative writing techniques (e.g. poetry, dialogue, point of view).
- *Sensory Detail:* Encapsulating a range of sensory detail (sight, sound, smell, touch, etc).
- *Presence of the Narrator:* Writing in a way that shows how a specific narrator is interacting with their surroundings (e.g. experiences, thoughts, feelings, memories).
- *Natural Descriptions:* Describing a specific location through geological, ecological, and biological observations, incorporating prior knowledge where appropriate.
- *Wider reflection:* Using the scene and your observations to generate wider reflections on nature.

3) "Today I noticed…" – 10% (at least 6 entries throughout the program)

These are entries that begin with the above phrase (or, if done weekly, *"This week I noticed…"*) and lead into a short reflection on specific ecological (not social) observation that ignited a sense of curiosity or learning. Entries should include additional research from field guides or lectures to support, refute, or deepen insight into the ecological observation. Entries will be graded according to:

- *Focus:* Focuses on a specific ecological phenomenon.
- *Detail*: Makes detailed observations on environmental and/or species interaction.
- *Knowledge:* Incorporates information learned prior to or during the course (e.g. from field guides, lectures, guests, locals, peers).
- *Reflection:* Critically reflects on the observations made to generate possible hypotheses or further questions.

4) ***Other assignments – 5%*** (as assigned)

Refers to any other specific journal activity or assignment given by the Instructors throughout the program, such as field surveys, ethology exercises, tracking, and mapping. Entries will be graded for *Completion*, *Effort*, and *Legibility*.

Oral Presentation (Individual) – 15%

Students will be assigned a topic four weeks before arriving to Australia. During this time, students will carry out bibliographic research and then complement it with the activities and experiences during the program, if appropriate. An oral presentation of 10 minutes (+5 minutes discussion) and a 1-2 page summary of **bulleted** information will be evaluated for this project. Oral presentations are graded according to:

- *Content* (coverage, relevance, accuracy, originality, creativity)
- S*tructure* (logical flow, adhering to the time limit)
- S*tyle* (audience engagement/participation, clarity, demeanor)
- *Discussion* (ability to answer questions about the topic and generate/facilitate discussion around key points)
- *Bullet-point summary* (1-2 page overview of key points – can be handwritten or typed/print-faced. Must include referencing and reference list, i.e. articles/books/websites/personal sources used (at least three different sources). Cut/paste plagiarism (i.e. verbatim unreferenced material) will not be accepted.

Final exam – 15%
Students will take a written exam to evaluate their understanding of the key themes addressed throughout the course. Some facts may be examined; however, the emphasis is more on critical reflection and application of core concepts and principles to scenarios.

Participation – 10%
Includes general engagement with the subject matter and participation in group readings discussions.

ESCI 497U
Species Sightings List – 25%
Starting at the back of their Field Journals, students will prepare columns with the following titles:

Date & Weather // Classification (Taxa) // Species Name (Common & Scientific) // Habitat // Field Notes // Count

The Species Sightings List will be ordered chronologically and separated (i.e. ruled off) according to each location visited.

Species lists will be graded according to:
- *Consistency of use*: It is used continuously throughout the program.
- *Accuracy:* Information entered is accurate.
- *Representation:* Contains a fair representation of key species encountered per area visited.
- *Detail:* Brief field notes are expected for each entry and may include notable features, behavior, number of individuals. Species can and should be entered multiple times across each distinct location, particularly if that reflects the range of a particular species; in other words, the species list is more than just a 'check box'.

Mid-term Assessment: Research Proposal (Pair) – 10%
In a group of two (2), students will develop a research proposal for a real or hypothetical project in a given context. The proposal will be presented to the examiners (and possibly other stakeholders) as if the students are 'pitching' to prospective funders. The proposal must include: research questions, general and specific objectives, (field) methods, anticipated outcomes, and evaluation criteria. Ethical and community considerations must be integrated into the research topic and methodology.

Group Project: Monitoring – 30%
In a group of four (4), students will develop a marine research and monitoring project with the vision that this will be implemented and continued by other students or citizen scientists in years to follow. Students will peer assess each other on project participation. The projects will need to be:
- Centered on a core ecological question that has been developed throughout the program.
- Demonstrate understanding of the relevant field techniques learned and practiced during the program.
- Justified (theoretically and practically) with rationale/links to the 'bigger picture' (e.g. conservation outcomes).
- Supported with stepwise guidance for persons wishing to implement this monitoring program in the future.
- Accompanied by an oral presentation graded according to the same criteria as used for the individual presentation.

Pop Quizzes – 10%
Short factual quizzes based on the attentiveness and retention of naturalist observations and resultant learning will be issued twice throughout the program. These will be themed around (but not necessarily limited to) plant ID/surveys, bird ID/surveys and reef ID/surveys.

Final Exam – 15%
Students will take a written exam to evaluate their understanding of the key survey methods encountered throughout the program. The emphasis will be on how these techniques can be applied in given scenarios.

Participation – 10%
Students will be evaluated according to their active participation and involvement in all field survey activities, particularly their contribution to group projects.

ESCI 497V
Learning Journal – 40% *(at least 12 thorough entries or more if shorter more regular entries are preferred)*
Students will develop a "social-ecological autobiography" (see Hayes 2008). This includes regular insightful reflections on learning experiences embedded within specific contexts, particularly concerning interactions with guest speakers and local communities. Entries should track changes in personal beliefs, perceptions, worldviews and learning, possibly as part of comparative reflection on past experiences/knowledge/places encountered back in North America. The entries highlight key learning moments and document information that finds resonance (appeal) or dissonance (challenge) within the student. Entries can include poetry, art, or free-writes. **The journal will conclude with a final reflective summary** (as the 13th entry) that synthesizes your "autobiography" during the program, in terms of how influential and pivotal learning moments have shaped you.

Each entry must begin with a sentence starting with the phrase: *"Right now I feel…"* before continuing on to whatever it is you want to write about. (Note: The theme does not need to be related or linked to your *"Right now I feel…"* statement.) It is also necessary to include a **table of contents** on the first page of the learning journal so entries can be easily located.

Grading criteria is as follows:
- *Consistency of Use:* Entries are completed regularly throughout the program (at least twice a week)
- *Content:* Entries explore the theme or experience in depth, from different angles, or use an experience as a means of wider philosophical or social reflection. Entries use learning experiences to make insightful links between themes, literature, and experiences prior, during, and beyond the program.
- *Style:* Entries are readable and make good use of first-person prose, poetry, art, or free-writes.
- *Effort:* The journal should demonstrate a genuine effort to thoughtfully reflect on the program.

Mid-term Assessment: Research Proposal (Pair) – 10%
In a group of two (2), students will develop a research proposal for a real or hypothetical project in a given context. The proposal will be presented to the examiners (and possibly other stakeholders) as if the students are 'pitching' to prospective funders. The proposal must include: research questions, general and specific objectives, (field) methods, anticipated outcomes, and evaluation criteria. Ethical and community considerations are critical to this assessment and must be integrated into the research topic and methodology.

Local Dictionary – 10%
The local dictionary is a catalogue of cultural-specific (both Aboriginal and non-Aboriginal) words/phrases encountered during the program that are unique to Australia (e.g. may include colloquialisms and slang). Reserve the back of your learning journal for your local dictionary and create a table with the following columns:

Word / Phrase // Language Group // Translation

Grading will look for *Consistency of Use*, *Effort*, and that the dictionary is *Representative* of notable words/phrases encountered during the program.

Final Exam – 15%
Critical analysis and reflection on selected social-cultural issues encountered during the program.

Final Reflection – 15%
Students will prepare a concise reflection (3-5 A4 pages) on the development of their worldview throughout the program. Students will detail their worldview and place it in context and alongside other (cultural and ecological) worldviews studied or encountered during the program. Students may integrate their ideas about where and how their own perceptions and beliefs were challenged, dislodged or reinforced. Students are encouraged to make links with ideas

about their own evolving naturalist intelligence and/or social-ecological connectedness, and to refer to the people (i.e. from peers to presenters) and personal experiences that have been of significant influence throughout the program. Grading criteria is as follows:

- *Analysis:* Clearly identifies the key contrasting perspectives encountered during the program and explains the role they have played in contributing to one's own worldview.
- *Synthesis:* Integrates different perspectives and articulates a distinct set of values or way of looking at the world.
- *Structure:* Ideas are logically ordered and cohesive.
- *Style*: Writing is succinct and engaging and effectively conveys the key ideas.
- *References:* References to any available literature will be viewed favorably.

Participation – 10%
Students will be evaluated according to active participation in everyday activities as well as their attitude and involvement when engaging with guests and local hosts (e.g. Aboriginal community or research institutes). In this particular course, it is important that the student demonstrates an open mind, a willing attitude, and a respectful etiquette in interacting with team members and local groups. Finally, the student's positive contribution to the team effort and dynamic will be monitored.

V. Grading Scheme

To convert final grade percentages to letter grades for each course that will appear on your transcript, we will use the following grading scheme:

Grade	Percentage	Grade	Percentage	Grade	Percentage	Grade	Percentage	Grade%
		B+	80.0 - 84.9	C+	60.0 - 64.9	D+	40.0 - 44.9	
A	90.0 - 100	B	70.0 - 79.9	C	50.0 - 59.9	D	30.0 - 39.9	F < 25.0
A-	85.0 - 89.9	B-	65.0 - 69.9	C-	45.0 - 49.9	D-	25.0 - 29.9	

VI. General Reminders

Academic Integrity is as relevant in this field course as it is at your home institution. Plagiarism, using the ideas or materials of others without giving due credit, cheating, or putting forth another student's work as your own will not be tolerated. Any plagiarism, cheating, or aiding another to cheat (either actively or passively) will result in a zero for the assignment. Cases of academic dishonesty may be reported to your home institution.

Assignment deadlines are necessary so course instructors can get the grading done on time. These deadlines need to be enforced so that diligent students aren't penalized for being punctual. Therefore, work submitted late may receive a lower grade than equivalent work submitted on time. If you think circumstances may keep you from completing your work on time, talk to the instructor before the assignment is due.

Participation and attendance are crucial throughout this project. Because of the demanding schedule and limited time, all components of the program are mandatory (unless indicated) and missing even one lecture can have a proportionally greater effect on your final grade. Hence, it is important to be prompt and prepared (i.e., with required equipment) for all activities. Students with special needs should meet with the lead instructor as soon as possible to discuss any special accommodations that may be necessary.

VII. Academic Schedule & Course Content

The anticipated academic schedule and daily itinerary is outlined in the following table, but daily scheduling is subject to change according to local conditions (e.g. weather, tides, availability of guest researchers, and 'strategic opportunism'). We ask for you to be open to a degree of flexibility with the programming to optimize learning experiences.

	Date 2016		Location	Lecture Topics & Activities	Readings & Discussion	Assignments Due
WEEK 1	Saturday, 2 July	AM	Cairns 13:30	Arrival and Welcome	Hayes 2009: Into the field… Natural History Journaling Parker (n.d.) Natural history…	*All Oral Pres for ESCI 497T*
		PM		Review Itinerary, Logistics, Safety Protocols		
	Sunday, 3 July	AM	Cairns Ferry Departure: 11.00	Purchase food for Fitzroy Island		**– Oral Pres.** **– Oral Pres.**
		PM	Fitzroy Island	Wet Tropics History & background Review syllabus, responsibilities Area familiarization		
	Monday, 4 July	AM	Fitzroy Island	Reef surveying, Tropical island ecology, Conservation management & current issues	Day 2008 - Chptr 12: Planning and Managing… **OR** Hopley 2008 – Chptr 2 Geomorphology…	**– Oral Pres.** **– Oral Pres.**
		PM		Sea Turtle Introduction, Nature writing		
	Tuesday, 5 July	AM	Fitzroy Island	Sea Turtle Rehabilitation Centre: Mortality, Conservation and Rehabilitation, Species ID	*Choose article above to read which most interests you*	**- Oral Pres.**
		PM	Ferry Departure: 17.00 Cairns	Reef surveying techniques and observation		
	Weds. 6 July	AM	Cairns (09:45 WTMA & Depart 14:15	Purchase food, pack and prepare 10:15-11:15 WTMA Presentation		
		PM	Wooroonooran NP	14:15 Travel to Goldsborough Valley /Introduction to Wooroonooran NP		**– Oral Pres.**
	Thursday, 7 July	AM	Wooroonooran NP	Bird Survey / Hike to East Mulgrave River	Stork et al 2008 - Chapter 1: Australian Rainforests…	
		PM		Rainforest Ecology - the Wet Tropics		
	Friday, 8July	AM	Wooroonooran NP	Grinnell Naturalist Observation		***Journals - progress check***
		PM	Depart: 17.00 Cairns	Sacred Natural Sites, Bana Binda (Boulders)		
	Saturday, 9 July	AM	Cairns (Depart 09:45)	10: 00 Jabalbina / 13: 00 Mossman Gorge		
		PM	Cape Tribulation	16:30 Area Introduction		
	Sunday, 10 July	AM	Cape Tribulation	Discussion and review	Goosem 2008 - Chapter 24: Invasive Weeds…	**– Oral Pres.** **– Oral Pres.**
		PM		Area familiariziation, bird surveys		
WEEK 2	Monday, 11 July	AM	Cape Tribulation	Botany and plant identification		
		PM		Dubuji walk, littoral ecology		

	Tuesday, 12 July	AM	Cape Tribulation	Rainforest ecology & research - Daintree Rainforest Observatory	Goosem et al 2008 - Chapter 48: Rainforest Science …	
		PM		Marine debris assessment		
	Weds., 13 July	AM	Cape Tribulation	Rainforest rehabilitation and monitoring		
		PM		Marine debris assessment		
	Thursday, 14 July	AM	Cape Tribulation	Kulki Hike: Shoreline assessment		
		PM		Discussion and journaling		
	Friday, 15 July	AM	Cape Tribulation Depart: 08.00 Reef Shiptons Flat	Pack up & departure - Mackay Reef trip - Arrival 14:00 Bloomfield R. (WujalWujal)	Cullen-Unsworth et al 2010 – Cooperative Research…	*Half the class reads & summarizes for the other half* **– Oral Pres.**
		PM		Cultural Landscapes, Welcome, History of Bana YarraljiBubu	Ens et al. 2012: Australian approaches for managing ...	**– Oral Pres**
	Saturday, 16 July	AM	Shiptons Flat	Working on Country / Tree Kangaroo (Jarabeena) Survey		**Journals (Mid-term Review)**
		PM		Visit to Black Mountain / Cooktown		**(***ESCI 497T***,** *ESCI 497U, ESCI 497V***)**
	Sunday, 17 July	AM	Shiptons Flat	Indigenous Ecological Knowledge Climate Change & Seasonal Calendar		
		PM				
WEEK 3	Monday, 18 July	AM	Shiptons Flat	Bird surveys (Keatings Lagoon), Cooktown		
		PM		Working on Country and/or Cultural Roles (Men's & Women's Business)		
	Tuesday, 19 July	AM	Shiptons Flat	Mid-term Preparation & Discussion		**Mid-term Assessment**
		PM		Mid-term Assessment		**(***ESCI 497T***,** *ESCI 497U, ESCI 497V***)**
	Weds., 20 July	AM	Depart 07:30 Laura	Rock Art & Aboriginal Lore		
		PM	Chillagoe	Travel, Food Purchases & Debrief		
	Thursday, 21 July	AM		Cave Geology & Gondwana Natural History	Barbour & Schlesinger 2012 - Who's the boss	**- Oral Pres.**
		PM	Chillagoe	Astronomy introduction - Southern Hemisphere night skies		
	Friday, 22 July	AM		Discussion & Review		
		PM	Chillagoe	Wildlife Tracking - Introduction		
	Saturday, 23 July	AM	Depart 10:00 Atherton	Pack-up & Travel		
		PM	Atherton Tablelands	Food Purchases & Area Introductions		**- Oral Pres.** **- Oral Pres.**
	Sunday, 24 July	AM		Introduction to Country / Malanda Walk	Stork et al 2008 - Chapter 49: Lessons for Other…	
		PM	Atherton Tablelands	Discussion & Debrief		

WEEK 4	Monday, 25 July	AM		Sunrise Bird Survey: Nyleta Wetlands 10am Presentation: Tolga Bat Hospital		
		PM	Atherton Tablelands	Naturalist Intro & Nocturnal Surveys (Alan)		
	Tuesday, 26 July	AM		Bird Survey Lake Eacham	Swaisgood& Sheppard 2010 - The Culture… Lidicker 2011 – Hope… Swaisgood& Sheppard 2011 – Reconnect...	*Readings split between class* *Group Debate*
		PM	Atherton Tablelands	Discussion & Debrief (Freshwater Snorkel)		
	Weds., 27 July	AM		Bird Survey: Lake Barrine		
		PM	Atherton Tablelands	Tree-Kangaroo & Mammal Group		
	Thursday, 28 July	AM	Depart: Atherton	Debrief & Pack-Up	Schultz 2011 - Conservation Means Behavior….	
		PM	Cairns	Crocs & Conservation Conundrums		
	Friday, 29 July	AM	Cairns	Wash, pack, food, shopping, prepare		
		PM	Depart: 13:00 Cardwell	Bus Transfer / Area Introduction		**- Oral Pres.**
	Saturday, 30 July	AM	Depart: 06:30 & 08:30	Natural History / Grinnell Field Journal:		
		PM	Hinchinbrook NP	Ramsay Bay to Little Ramsay Bay		
	Sunday, 31 July	AM		Natural History / Grinnell Field Journal:		
		PM	Hinchinbrook NP	Little Ramsay Bay to Zoe Bay		
WEEK 5	Monday, 1 August	AM		Natural History / Grinnell Field Journal:		
		PM	Hinchinbrook NP	Zoe Bay to Sunken Reef Bay		
	Tuesday, 2 August	AM		Natural History / Grinnell Field Journal:		
		PM	Hinchinbrook NP	Sunken Reef Bay to Mulligan Falls		
	Weds., 3 August	AM	Depart 13:00 Lucinda	Mulligan Falls to Georges Point (Transfer)	Hughes 2008 - Chapter 9: Human Impact …	**- Oral Pres.**
		PM	Depart 16:00 Orpheus	Debrief & Discussion		**- Oral Pres.**
	Thursday, 4 August	AM		OIRS Safety Induction	Siebeck et al 2006 - Monitoring Coral…	
		PM	Orpheus Island NP (OIRS)	Presentation: CoralWatch / ReefSearch		
	Friday, 5 August	AM		Reef Surveys		
		PM	Orpheus Island NP (OIRS)	Group Projects		
	Saturday, 6 August	AM	Orpheus Island NP (OIRS)	Reef Surveys / Reef Grinnell Walk		
		PM		Group Projects		

	Sunday, 7 August	AM	Orpheus Island NP (OIRS)	Reef Surveys / Island Hike	Greenway 2011 - Can a bigger map save us?	
		PM		Group Projects / Integral Ecology		
WEEK 6	Monday, 8August	AM	Orpheus Island NP (OIRS)	Brampton Outer Reef Surveys		**Group Project Presentations (*ESCI 497U*)**
		PM		Brampton Outer Reef Surveys		
	Tuesday, 9 August	AM	Orpheus Island NP (OIRS)	Group Project Presentations		**Group Project Presentations**
		PM		Goethe & Nature Writing		**(*ESCI 497U*)**
	Weds., 10 August	AM	Depart OIRS: 07:00	Pack-up & Travel		**Journals (Final Review) (*ESCI 497T*, *ESCI 497U, ESCI 497V*)**
		PM	Orpheus NP: Yanks Jetty	Reef Survey / Transects		
	Thursday, 11 August	AM	Orpheus NP	Discussion: Delicate Activism	Laszlo Kathia 2012 – Systems thinking…	
		PM	Yanks Jetty	Exam preparation		
	Friday, 12 August	AM	Orpheus NP Yanks Jetty	Final Exam		**Final Exam (*ESCI 497T*, *ESCI 497U, ESCI 497V*)**
		PM		Debrief, Review & Evaluation		
	Saturday, 13 August	AM	Yanks Departure: 09:30 Cairns	Pack Up & Transfer Complete Final Reflection		**Final Reflection (*ESCI 497V*)**
		PM	Cairns	Group Dinner (Evening)		
	Sunday, 14 August	AM	Departure	Program Completed: 06:00		

VIII. Reading List

Readings to be discussed while in the field (provided upon arrival):

Ashley, P. 2007. Toward an understanding and definition of wilderness spirituality. Australian Geographer 38:53–69. Routledge.

Balcombe, J. 2011. Concluding remarks: from theory to action: an ethologist's perspective. In N. Taylor and T. Signal, editors. Theorizing Animals: rethinking humanimal relations. BRILL.

Barbour, W., and C. Schlesinger. 2012. Who's the boss? Post-colonialism, ecological research and conservation management on Australian Indigenous lands. Ecological Management & Restoration 13:36–41.

Bauman, T., and D. Smyth. 2007. Indigenous partnerships in protected area management in Australia: three case studies. 168pp. Canberra.

Bentrupperbäumer, J., T. J. Day, and J. P. Reser. 2006. Uses, meanings, and understandings of values in the environmental and protected area arena: a consideration of "World Heritage" values. Society & Natural Resources 19:723–741.

Cullen-Unsworth, L. C., J. R. A. Butler, R. Hill, and M. Wallace. 2010. Cooperative Research: an example from the Wet Tropics of Queensland. The International Journal of Interdisciplinary Social Sciences 5:139–154.

Day, J. 2008. Planning and managing the Great Barrier Reef Marine Park. Pages 114–121 in P. Hutchings, M. Kingsford, and O. Hoegh-Guldberg, editors. The Great Barrier Reef: biology, environment and management. CSIR Publishing & Springer, Collingwood.

Ens, E. J., M. Finlayson, K. Preuss, S. Jackson, and S. Holcombe. 2012. Australian approaches for managing "country" using Indigenous and non-Indigenous knowledge. Ecological Management & Restoration 13:100–107.

Fryer-Smith, S. 2002. Aspects of Traditional Aboriginal Australia. Pages 2:1 – 2:29 in S. Fryer-Smith, editor. Aboriginal Benchbook for Western Australian courts. Australian Institute of Judicial Administration Incorporated (AIJA), Carlton.

Greenway, R. 2011. Can a bigger map save us? A commentary on Esbjörn-Hargens and Michael Zimmerman's Integral Ecology: Uniting multiple perspectives on the natural world. Ecopsychology 3:159–163.

Hayes, M. A. 2009. Into the field: naturalistic education and the future of conservation. Conservation Biology, 23(5), 1075–1079.

Hughes, T. P. 2008. Human impact on coral reefs. Pages 85–94 in P. Hutchings, M. Kingsford, and O. Hoegh-Guldberg, editors. The Great Barrier Reef: biology, environment and management. CSIR Publishing & Springer, Collingwood.

Pandolfi, J. M., and R. Kelley. 2008. The Great Barrier Reef in time and space: geology and palaeobiology. Pages 17–27 in P. Hutchings, M. Kingsford, and O. Hoegh-Guldberg, editors. Handbook of the Great Barrier Reef, 2nd edition. CSIRO Publishing.

Parker, A. (n.d.). Natural history and naturalist skills.

Schultz, P. W. 2011. Conservation means behavior. Conservation Biology, 25(6), 1080–1083.

Smith, L. D. G., Ham, S. H., & Weiler, B. V. 2011. The impacts of profound wildlife experiences. Anthrozoös, 24(1), 51-64.

Silveira, L., A. Jacomo, and J. Diniz-Filho. 2003. Camera trap, line transect census and track surveys: a comparative evaluation. Biological Conservation 114:351–355.

Stork, N. E., and S. M. Turton. 2008. Living in a Dynamic Tropical Forest Landscape. (N. E. Stork and S. M. Turton, Eds.). Wiley-Blackwell, Cairns. 652pp.

Stork, N. E., S. Goosem, and S. M. Turton. 2011. Status and threats in the dynamic landscapes of northern Australia's tropical rainforest biodiversity hotspot: the Wet Tropics. Pages 311–332 in F. E. Zachos and J. C. Habel, editors.

Biodiversity hotspots: distribution and protection of conservation priority areas. Springer Verlag, Berlin Heidelberg.

Turton, S. M., and N. E. Stork. 2008. Environmental impacts of tourism and recreation in the Wet Tropics. Pages 349–355 in N. Stork and S. M. Turton, editors. Living in a dynamic tropical forest landscape. Blackwell Publishing Inc, Carlton.

Primary field guides

Simpson & Day, 2010. *Field Guide to the Birds of Australia*.

Holliday, I. 2002. *A Field Guide to Australian Trees*.

Menkhorst, P. & Knight, F. 2011. *Field Guide to the Mammals of Australia.*

Wilson, S. and Swan, G. 2011. *A Complete Guide to Reptiles of Australia.*

Storey, R. and Zborowski, P. 2010. *A Field Guide to Insects in Australia.*

Other reference books available

Caring for Kuku Nyungkal Country.
Yalanji People of the Rainforest (Fire Management Book).
Track, scats and traces.
Slang of Australia.
Wildlife of Tropical North Queensland.
Mammals of Australia (two copies).
Australian Trees.
The Songlines.
Marine Life.
Native Plants.
Spiders of Australia.
Sharks and Rays of Australia.
Snakes and other reptiles of Australia.
Insects of Australia.
Weeds of National Significance.
Rainforest of Tropical Australia.
From the Heart (for short group readings and activities).
Motivating Change in the Catchment.
What is happening in our backyard.
Dugong and Marine Turtle Knowledge Handbook.
Northern Gulf's Little Book of Big Achievements.