

JAMAICA FIELD COURSE

ERS 375 (Winter 2014)

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Course Overview

The Jamaica field course offers a unique opportunity to examine the linkages among ecology, conservation and development and environmental policy issues in a rapidly changing coastal-marine context. Current threats to Jamaica's coastal-marine environment include overfishing, invasive species, poverty, and tourism development, along with the impacts of climate change (e.g., sea level rise, coral bleaching). Innovative strategies are required to protect Jamaica's ecosystems, maintain the livelihoods and wellbeing of coastal people, and help individuals and communities adapt to change.

The course has an in-class component in addition to the field component (see schedule). We will meet several times in advance of our departure to Jamaica to: 1) discuss course logistics, expectations and responsibilities; 2) engage with major themes in the course, including the human and biophysical dimensions of coastal-marine change, management and governance, and social and ecological sustainability; and 3) lay the groundwork for individual research projects and course assignments.

The field course component will involve visits to selected sites on both the north and south coast of Jamaica, and includes opportunities to interact with fisherman and coastal tourism operators, decision makers, and marine managers and researchers engaged in coastal-marine initiatives. We will also have an opportunity to snorkel among the sea grass beds and observe first-hand the state of coral reefs and fisheries.

We will be based at the Discovery Bay Marine Lab and then subsequently at Belmont Cabins in Bluefields Bay. Accommodation will be comfortable but modest, and meals will be based on locally available products. Active participation is essential for a successful course, and you will be engaged in multiple ways: developing an individual research project, maintaining a field journal, designing and producing a short podcast, and contributing a post to a course blog. Stringent guidelines about course expectations and codes of conduct while in the field are non-negotiable. We will work hard, learn a great deal and do so in a collegial and professional manner.

Course Objectives

At the end of this course, you should be able to:

- Understand the major challenges and drivers of coastal-marine change and the implications for management and governance;
- Consider and assess various applications (e.g., ecosystem-based management, marine protected areas, development of living shorelines, community conservation schemes) applied at local to national scales to deal with coastal-marine change;
- Critically assess the assumptions underlying these applications, their limitations and the opportunities they provide for a transition to more social and ecologically sustainable coastal-marine contexts; and
- Apply an understanding of course material to a research project of interest.

Required readings

There is no required course text. However, required readings are listed in the course schedule (below), and they are accessible via TRELIS. Readings will focus on selected themes, concepts and strategies that are particularly conducive to transdisciplinary coastal-marine research and practice. Course materials and lectures will be augmented as appropriate (e.g., videos, guest speakers).

Course requirements and evaluation

This is a 1.0 credit weight course. Evaluation in this course is based on: (i) class engagement; (ii) maintaining a field/learning journal; (iii) designing and producing a short podcast; and (iv) completion of an individual major research paper and accompanying presentation. A summary of each expectation is provided below:

i) Class engagement (10%)

Assigning marks for class participation and engagement is intended to encourage you to approach the course in a professional and committed manner. The overall mark for engagement is based on your attendance and participation in discussions and course activities (both in the field and in-class). The mark is also linked to the code of conduct for behaviour to which all course participants are expected to adhere.

ii) Individual field / learning journal (20%) and blog (10%)

You will be responsible for maintaining an individual learning journal / log. The purpose of the journal is to help you highlight and critically reflect on what you think are the key ideas and concepts addressed in the class, and following each of the field study visits/activities. Approximately 8-10 journal entries are required, and additional guidelines on the field/learning journal will be provided. Part of this course requirement will be transitioning one (or synthesizing one or more) of the field/learning journal entries into a blog entry that will be posted on a course webpage/blog. This entry can be linked to your research paper topic.

iii) Designing and producing a short podcast (15%)

You will produce and record a 4-5 minute podcast. The purpose of the podcast is two fold: i) to develop your science communication skills and ii) to serve as a building block for your research paper. We would encourage you to use this as an opportunity to clarify your thinking and clearly communicate the essence of your research paper to a broader audience. Further details will be provided.

iv) Major research paper (30%) and presentation (15%)

A key course outcome is the preparation of a major research paper (approximately 4000 words) on a topic you explore before, during and after the field course component. The paper must address in some manner the course themes, although you are free to incorporate other material and topics provided you have discussed this with the course instructors ahead of time. Similarly, you are expected to incorporate class readings in your research paper, although you are encouraged to integrate other readings and sources of information as appropriate. Additional details on the research paper will be provided. In regards to your paper, keep in mind the following:

- A reasonably well-developed paper proposal must be submitted for comments/feedback prior to our departure for Jamaica, and should include a clear thesis or problem statement, an indication of general organization of the paper, and a working bibliography (see class schedule).
- You will present your paper in a class towards the end of the term (details to follow). You must be available for this class.
- Your final research paper is due on Friday March 28th, 2014 (4:00pm).

All assignments must be completed to receive a mark for the course. Requests for extensions of any assignment must be done so in writing in advance of the assignment due date. In the event of an illness, a supporting medical certificate completed by a physician must be provided. Extensions may be granted for significant emergencies at the discretion of the Instructor. Please consult the University's policy on plagiarism and academic misconduct. Please ensure you are aware of what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for your actions. If you are unsure whether an action constitutes an offense, or you need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration, please see me. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline: <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>

Within ENV, those committing academic offences (e.g. cheating, plagiarism) will be placed on disciplinary probation and will be subject to penalties which may include a grade of 0 on affected course elements, 0 on the course, suspension, and expulsion. Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance: <http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>

Estimated course costs

Significant effort has been made to keep course costs and fees to a minimum. The overall costs for students (not including course registration at UW is approximately \$2000 Canadian. This includes the costs of airfare, all accommodations, meals, in-country travel and tours, etc. Incidentals (e.g., snacks, gifts) are not covered. You will be responsible for drop-off and pick-up at Pearson International Airport (Toronto). You must also have a valid passport.

Note that some variation in the overall cost for the course may occur depending on the final price for the flight, local circumstances, differences in exchange rates, etc.

Participation in the course requires full payment (full fees are due December 1, 2013). A deposit of \$500 is required November 1, 2013 to confirm a space in the course.

Personal Conduct and Safety

Safety is our first concern on an international field course. We conceive of safety broadly, including its physical, emotional, and intellectual aspects. We rely on you (i.e. the students) to help contribute to a safe atmosphere for the courses. Behavior that threatens any aspect of your safety, or that of other students or instructors, will not be tolerated. Physical safety is, of course, our first concern. We expect students to abide by the following rules and standards of personal conduct.

- Students will travel with the group unless otherwise directed by instructors.
- Climbing that requires the use of hands is not allowed (e.g. cliffs, rocks, trees, etc.)
- Abide by the laws of the host country and all applicable policies, procedures and requirements of the University of Waterloo and other institutions involved in the program
- Be aware of local conditions and customs that may present health or safety risks. Promptly express any health or safety concerns to the instructors.
- Use of illegal drugs and/or irresponsible consumption of alcohol is prohibited.
- Students and instructors must respect norms of conduct and help maintain the University of Waterloo's good reputation in the places we visit, whether this is a community, a government office, or a hotel. We build relationships in these communities and our local contacts are vital to future courses.

All students and instructors shall treat oneself and others with respect at all times. Group dynamics and friendships require honest and open communication. Please communicate your feelings or requests early, before a minor issue becomes a distraction. If you are sensitive, mindful and self-aware throughout our time in the field, we are bound to have a successful course.

2014 Course Schedule Overview

<u>Week of</u>	<u>Theme</u>	<u>Readings / Assignments</u>
Jan 6 th	Course introduction; logistics / overview; expectations and requirements	
Jan 13 th	Coastal-marine change and governance overview	Hughes et al. 2005; CARSEA 2007; Kittinger et al 2012; Armitage et al. 2012
Jan 21 st	Developing your research project	
Jan 27 th		
Feb 3 rd	Proposal meeting	Research paper proposal due by end of week
Feb 10 th	Pre-departure meeting	
Feb 17 th	<i>Field Course Component – See Detailed Schedule</i>	
Feb 24 th	Post-trip meeting	Submit field/learning journals & Blog Post by end of week
Mar 3 rd		Submit Podcast by end of wk.
Mar 10 th		
Mar 17 th	Class presentations and social event	Research presentations
Mar 24 th		Final research paper due March 28 th (4pm)

Detailed Field Schedule

Day	Location	Activities/ Topics	Course Themes and Example Readings
1 (Feb.14)	<ul style="list-style-type: none"> • Meet at Pearson Int. Airport • Group Flight to Montego Bay • Transfer to Discovery Bay Marine Lab 	<ul style="list-style-type: none"> • Orientation, Overview • Intro to Coastal-Marine Ecology (Dr. Dayne Buddo) 	Coastal Ecology: Hughes 1994; CFRAMP 2000; Hardt 2009; Cote et al 2013
2 (Feb.15)	Discovery Bay	AM <ul style="list-style-type: none"> • Snorkeling @ Pear Tree Bottom <ul style="list-style-type: none"> • Coastal-Marine Ecology Observations PM <ul style="list-style-type: none"> • Invasive Species (Dr. Dayne Buddo) • Introduction to Fisheries in Jamaica 	Coastal Ecology: Hughes 1994; CFRAMP 2000; Hardt 2009; Cote et al 2013
3 (Feb.16)	Discovery Bay	<ul style="list-style-type: none"> • Meet w/ Fisherman from Alloa Fisherman’s Cooperative Society 	Coastal livelihoods; Carney 1998; Bene 2003; Aiken & Ennis (In Press)
4 (Feb.17)	Oracabessa/ Boscobel (Day Trip)	<ul style="list-style-type: none"> • Visit coral restoration project • Snorkeling • Managing coastal resources through private/public partnerships Tentative Guest Speakers: <ul style="list-style-type: none"> • Andrew Ross- Seascape Caribbean 	Governance and policy: Agardy 2005; Lemos and Agrawal 2006; Berkes 2010

		<ul style="list-style-type: none"> Jonathan Goose –ED Oracabessa Fnd 	
5 (Feb.18)	Travel to Bluefields Bay	AM <ul style="list-style-type: none"> Travel PM <ul style="list-style-type: none"> Independent work and reflection 	Reflection and synthesis
6 (Feb.19)	Bluefields Bay	<ul style="list-style-type: none"> Bluefields Community hiking tour; fishing docks and subsistence farming 	Livelihoods and small-scale fishers: Kong 2005; Burke and Kushner 2011
7 (Feb.20)	Bluefields Bay	<ul style="list-style-type: none"> Boat Tour of Bluefields Bay <i>SFCA</i> Meet w/ Bluefields Bay Fisherman’s Friendly Society (Lion Fish – Fish Fry) Tentative Guest Speakers: Wolde Cristos – President BBFFS	Marine protected areas: McLeod et al 2009; Mills et al 2010; Cinner et al 2012
8 (Feb.21)	Bluefields Bay/ Whitehouse	<ul style="list-style-type: none"> Small-Scale Fisheries and Local Economies (Whitehouse Fish Market, Fish Processing Plant) Tentative Guest Speakers <ul style="list-style-type: none"> Mr. Honeygun (Gillings Gully Fisherman Cooperative-Chairman) Jaquilin Chin-Cole/ Richard Cole (Cole’s Seafood & Poultry) 	Reflection and synthesis
9 (Feb.22)	Negril (Day Trip)	<ul style="list-style-type: none"> Boat Tour of Negril Coast/ Snorkel Excursion Tentative Guest Speakers <ul style="list-style-type: none"> Ms. Allison Pearce (NEPA) Dr. Donovan Campbell (CARIBSAVE) 	Coastal adaptation: Pulwarty et al 2010; Cinner et al 2013; Bernhardt & Leslie 2013
10 (Feb.23)	<ul style="list-style-type: none"> Transfer from Bluefields Bay to Montego Bay Return from: Montego Bay to Toronto Pick up at Pearson Int. Airport 		

READINGS (ALL AVAILABLE ON TRELIS OR WWW; ADDITIONAL READINGS AND/OR CHANGES TO READINGS TO REFLECT COURSE PARTICIPANT INTERESTS IS EXPECTED)

- Agardy, T. 2005. Global marine conservation policy versus site-level implementation: the mismatch of scale and its implications. *Marine Ecology Progress Series* 300, 242-248.
- Aiken, K. & Ennis, Z. (In Press). 'Spearfishing in Jamaica: An Emerging Concern' *Revista de Biología Tropical*.
- Armitage, D., de Loe, R., and R. Plummer. 2012. Environmental governance and its implications for conservation practice. *Conservation Letters*. 5: 245–255
- Bene, C. 2003. When Fishery Rhymes with Poverty: A First Step Beyond the Old Paradigm on Poverty in Small-Scale Fisheries. *World Development*. 31(6): 949–975.
- Berkes, F. 2010. Linkages and multilevel systems for matching governance and ecology: Lessons from roving bandits. *Bulletin of Marine Science* 86(2), 235-250.
- Berkes, F. 2011. Ch. 2 Restoring unity: The concept of marine social-ecological systems. In: Ommer, R., Perry, R., Cochrane, K., & Cury, P. (Eds.) *World fisheries: A social-ecological analysis*. UK: Wiley-Blackwell.
- Bernhardt, J. & Leslie, H. 2013. Resilience to climate change in coastal marine ecosystems. *Annual Review of Marine Sciences* 5, 371-92.
- Burke, L. & Kushner, B. 2011. *Coastal Capital: Jamaica – The economic contribution of Jamaica's coral reefs*. Washington, DC: World Resources Institute.
- CARSEA. 2007. Caribbean Sea Ecosystem Assessment: A sub-global Component of the Millennium Ecosystem Assessment. *Caribbean Marine Studies*, Special Edition.
- CFRAMP. 2000. Jamaica National Marine Fisheries Atlas. CARICOM Fishery Report No. 4: 53 p.
- Cinner, J. et al. 2013. Social-ecological vulnerability of coral reef fisheries to climatic shocks. *FAO Fisheries and Aquaculture Circular* No. 1082.
- Cote, I. et al. 2013. Predatory fish invaders: Insights from Indo-Pacific lionfish in the western Atlantic and Caribbean. *Biological Conservation* 164, 50-61.
- Cudney-Bueno, R. & Basurto, X. 2009. Lack of cross-scale linkages reduces robustness of community-based fisheries management. *PLoS ONE* 4(7), e6253.
- Gardner, T. et al. 2003. Long-term region-wide declines in Caribbean Corals. *Science* 301, 958-960.
- Hardt, M. 2009. Lessons from the past: the collapse of Jamaican coral reefs. *Fish and Fisheries* 10, 143-158.
- Hughes, T. 1994. Catastrophes, phase shifts, and large-scale degradation of a Caribbean coral reef. *Science* 265(5178), 1547-1551.
- Hughes, T. et al. 2005. New paradigms for supporting the resilience of marine ecosystems. *TRENDS in Ecology and Evolution* 20(7), 380-386.
- Kittinger, J., Finkbeiner, E., Glazier, E., et al. 2012. Human dimensions of coral reef social-ecological systems. *Ecology and Society* 17(4): 17. [online]
- Kong, G. A. 2005. The consideration of socio-economic and demographic concerns in fisheries and coastal area management and planning: Jamaica Case Study. FAO.
- Lemos, M.C. and A. Agrawal. 2006. Environmental governance. *Annual Review of Environment and Resources*. 31: 297–325.
- McLeod, E., Salm, R., Green, A., & Almany, J. 2009. Designing marine protected area networks to address the impacts of climate change. *Frontiers in Ecology and the Environment* 7, 362-370.
- Mills, M., Pressey, R., Weeks, R. et al. 2010. A mismatch of scales: Challenges in planning for implementation of marine protected areas in the Coral Triangle. *Conservation Letters* 3, 291-303.
- Pulwarty, R., Nurse, L., & Trotz, U. 2010. Caribbean islands in a changing climate. *Environment: Science and Policy for Sustainable Development* 52(6), 16-27.
- UNEP. 2006. *Marine and coastal ecosystems and human well-being: A synthesis report based on the findings of the Millennium Ecosystem Assessment*. UNEP.
- Waite, R., Cooper, E, Zenny, N. et al. 2011. *Coastal Capital: Jamaica – The economic value of Jamaica's coral reef-related fisheries*. Working Paper. Washington, DC: World Resources Institute and the Nature Conservancy.
- Watson, R. & Howell, B. 2013. Closing the coral commons to support reef restoration in Florida. *Conservation Leadership Council*.