

**Study Abroad in Australia
2009
Draft (10/20/08)
Integrated Syllabus**

General Overview: Our study abroad program is designed to develop student's transdisciplinary, critical thinking, and global-orientation competencies. We focus on an integrated approach to understanding the human dimensions of sustainability and sustainable development. The courses are designed to be accessible and relevant to students of a broad range of majors and thus – while health-oriented in the broad sense – are in no way health-focused. The courses emphasize the importance of understanding about knowledge in a number of domains to sustainability, and particularly how they affect each other – particularly the natural and built environment and environmental histories, political a systems and institutions, and cultural histories, and culture and cultural knowledge. We are interested in exploring how a wide range of approaches and perspectives (e.g., social science vs biomedical, Western vs local or indigenous) help us think more critically and comprehensively about some of the major challenges we face in our rapidly changing (urbanizing, globalizing, shrinking) world, including how to develop and maintain health for all and sustainably use our environments.

Our courses emphasize the importance of good global citizenship, a concern with social justice, and the importance of environmental stewardship: we ask students to think deeply about and re-evaluate their own value systems as they observe and interact with the quite different settings and peoples of these diverse countries. To help achieve all this, we teach our courses in an integrated fashion, to address these larger set of goals. Coursework for each specific course is explained separately however, so that students can track progress with regard to specific goals and coursework within individual classes.

Course Policies:

Academic Honesty. Students are responsible for their own academic behavior, and for making themselves fully aware of the University's policies:

http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm.

Academic dishonesty includes using the uncredited work of others, but also tolerating or assisting dishonesty in others.

Disability Accommodations. If you are a disabled student in need of special arrangements for exams and/or homework, we will do all we can to help. But you will first need to bring a letter from the Disability Resources Center: 480-965-1234 (Voice) 480-965-9000 (TTY); you will also need to inform us well in advance of travel time.

Extra Credit: We will not assign work for extra credit.

Late Assignments: Late assignments will be accepted only under the most compelling and documented circumstances. Generally, make up exams will not be made except in the most compelling circumstances.

Attendance: Unexcused absences are grounds for dismissal from the course(s).

Collaborative Learning: We use collaborative (team) exercises and assignments as a tool to promote learning. It requires students to be flexible, open, and good-tempered; it is challenging but most professional settings now require us to work in teams so it is an

important skill set. In any group, tensions can arise because of course no one can contribute exactly what another can as we have different skills and styles. The trick is to determine how the group can harness everyone's strengths to move forward and reach a goal.

Final grades for each course will be assigned as follows:

A	89.5 - 100 percent
B	79.5 - 89.4 percent
C	69.5 - 79.4 percent
D	59.5 - 69.4 percent
F	below 59.4 percent

This syllabus is a general plan only: deviations should be expected and will be announced by the instructors.

Urban and Environmental Health
 ASM 591/ ASM 494 / SSH 494/ SOS 494
 OR
Poverty, Social Justice, & Global Health
 SSH 400/ ASB 400
 3 credit hours

Course Goals. Students will:

- Develop a sophisticated comparative understanding of how urbanism, globalization, and environmental conditions interact to affect the health of human populations, using the example of Australia.
- Be able to explain urban and environmental health as a social justice issue.
- Work as an effective member of an interdisciplinary research team.
- Have direct experience in the fundamental processes of urban-environmental health research, including application of social science methods to data collection & analysis.
- Explain the role of indigenous views and healing systems in promoting health and sustainability.
- Analyze health problems stemming from the political-economic setting of vulnerable and underserved populations.
- Critically evaluate the responsibility of nations, institutions, communities, and individuals in creating and effectiveness in reducing health and/or environmental inequities.
- Identify and evaluate ethical and social justice issues related to community based health- and environmentally related research and intervention.
- Engage productively in difficult, even controversial or adversarial, conversations regarding social inequities and responsibilities.
- Develop skills related to the development, support, and presentation of values-based propositions, including the ability to construct, support, and balance reasonable arguments on two or more sides of the same debate.
- Propose, refine, and defend a personal philosophy regarding responsibility for global health, including a plan for any action or advocacy.
- Distinguish externally-identified from community-identified health and/or environmental issues, methodologies, and solutions.
- Identify ways to improve communication and mutual understandings in community settings.
- Demonstrate effective problem-solving as a member of a team.
- Identify and refine an ideal model of community partnership.

In the program we will be looking at issues related to equity and the built environment, the history of health, and examining food and water quality from a social science perspective.

Class Readings

Prior to the start of the program, all students should have read the course reader and familiarized themselves with the material in it.

Coursework

Grades will be assessed based on:

Brisbane module	40 percent
Ethnohydrology interviewing and report	30 percent
Food environments exercise (Byron Shire section II)	20 percent
Reflection statement (oral)	10 percent

Higher (graduate level) standards in grading will be applied to ASM 591 students, and they will be expected to take a lead in managing and analyzing the group project data.

Society & Sustainability
 SOS 320
 OR
Cross-cultural Studies in Global Health (Australia/ Sustainable Solutions)
 ASB 443/SSH 403
 3 credit hours

Course Goals. Students will:

1. Understand the basic prehistory, history, ecology, political systems, health systems, and cultural dynamics of the country and region of interest, including how they interact, and the global, regional, and local historical, ecological, and social contexts of sustainability and wellbeing of populations.
2. Explain the relationship between well being in societies and long-term processes related to human adaptation, colonialism
3. Specify how social forces become manifest as inequities (in health, environment, etc).
4. Identify parallels and differences between history of indigenous peoples and minorities in the US versus other country cases, and their ecological, social and political implications.
5. Assess the impact and probable sustainability of community-based programs related to health or environmental change or improvement.
6. Identify and evaluate social justice and practical issues related to wellbeing of populations in resource-poor settings.
7. Critically evaluate the responsibility of nations, institutions, communities, and individuals in creating and effectiveness in reducing inequities.
8. Be able to address relationships between subsistence, diet, fertility, mortality and health and their local ecological setting.
9. Propose solutions.

Class Readings

Prior to the start of the program, all students should have read the course reader and familiarized themselves with the material in it.

Coursework

Grades will be assessed based on:

Sydney module	30 percent
Byron Shire module (section I)	30 percent
Carnarvon module	30 percent
Reflection statement (oral)	10 percent

Australia 2008 Modules DRAFT

Module I. Urban Sustainability: Sydney

More people now live in cities than not worldwide, and this is also the case in Australia. In this module we will begin exploring what we mean by sustainability and sustainable development using the case of Sydney and surrounding areas. We will also think about the important social and technological questions of “what makes cities work?” The urban environment, like that of the natural world, is a system comprised of multiple components and their interactions. These components include not only the built structures and resources used, but also the demographics, cultures, behaviours, politics, and economies of its residents and tourists, as well as the biophysical structures and processes of the natural landscape. Understanding the interactions of these (often competing) components is fundamental to developing and applying effective sustainable practices. We will use our perspective as tourists to think about how Sydney faces sustainability challenges related to tourist development, but also how it helps shape possible solutions.

Sydney receives over 300 days of sunshine a year, contains some of the most popular architecture in the world (including the Opera House and Sydney Harbour Bridge), arguably encompasses more spectacular beaches than any other large urban area in Australia, and has a shopping and arts culture that is rivalled by only a few other cities around the globe. It is “a place where great things come together in one package” and has a residential population and a tourism market to match. The metropolis is home to 4.5 million people (over 25% of the total population of Australia) and has come a long way from its convict past of only 230 years ago. In contrast to its European roots (primarily people of British or Irish ancestry), Sydney is highly diverse and multicultural with one in four of its residents (known as ‘Sydneysiders’) born overseas and over 200 different nationalities living within the city limits. Recent migrants have come predominantly from Eastern Pacific Rim countries (Cambodia, China, the Philippines and Thailand) and New Zealand. Research suggests that tourists are attracted to the natural features (parks and beaches) as well as cultural (arts, fashion, and shopping), sporting (Sydney played host to the 2000 Olympics), culinary, and business (conference tourism) opportunities that the area affords. Unfortunately, the modern city of Sydney was originally built with very little urban planning and only recently has there been attention given to conservation and the urban environment. (Some examples of recent and effective sustainable practices include Olympic Park, the Sydney Harbour Foreshore Authority, and the New South Wales Metropolitan Strategy.)

The influx of large numbers of people with such diverse backgrounds has created new demands for living standards and, in response, Sydney public authorities have promoted a multitude of environmentally sustainable practices, several of which you will see during your stay in Sydney, including drought tolerant plantings and natural and constructed water features), energy-efficient building designs (to maximize sources of ‘Green Power,’ reduce energy consumption, and reduce greenhouse gas emissions), preservation of native and endangered species and habitats (in landscape modification and community development schemes), selecting energy-efficient building management systems, promoting public transport), and noise mitigation strategies (to ensure minimal impact of noise on residential and/or commercial communities). Part of this module is to evaluate these practices and consider their application to a U.S. context.

Field Trips: *Blue Mountains, Sydney Olympic park Technical Tour, Harbor Bridge climb, Harbor Foreshore tour, Opera House tour and show, Rocks Aboriginal Dreaming Tour and Tribal warrior cruise*

Readings

New South Wales Metropolitan Strategy (December, 2005). Environment and Resources. Department of Planning: Sydney.

Hall, M. (1998). The politics of decision making and top-down planning: Darling Harbor, Sydney. In Tyler, D., Guerrier, Y., & Robertson, M. Managing Tourism in Cities (p.9-24). John Wiley and Sons: New York.

Reading on environmental justice

<http://www.sydneyolympicpark.com.au/>

Podcast lectures: *defining sustainability and sustainable development, how cities work, urban sustainability challenges, Aboriginal culture and history, ecological imperialism, fire and ecology in Australia.*

Guest lectures: *History and Ecology of Australia, Aboriginal society and culture, Sydney sustainability issues.*

Module Questions

1. How has the ecology (especially land vegetation) of Sydney changed since European arrival? How does the shift in vegetative types change the ecology of human lifeways in the area?
2. Highlight the primary interactions among human communities, biophysical ecosystems, and economic activity in contemporary Sydney. Identify what is unique to urban environments in general and Sydney in particular.
3. Select three approaches for sustaining Sydney's environment and resources and critically evaluate the applicability of each to your home town in the United States. Would you assess Sydney as a 'sustainable development' enterprise? Make sure you define what you mean by 'sustainability' and 'sustainable development'.
4. Select one environmental issue in Sydney (e.g., air pollution, energy, biodiversity maintenance) and discuss (a) the challenges surrounding the issue now and in the next 20 – 30 years and (b) the solutions to addressing these challenges.
5. How has tourism been used as a mechanism to regenerate urban areas in Sydney? How successful will it be over the longer term?
6. A. Assess the extent of Aboriginal peoples' engagement in the business of tourism, such as cultural tourism, and determine where the major benefits of this flow? B. Discuss: How much say do and should aboriginal groups have in land and resource policy, planning and resource use in contemporary Sydney? How would you assess this situation from a sustainability perspective?

Module II: (Eco)Tourism, Development, Health, and Sustainability: Byron Shire

The Byron Shire, covering an area of 566 square kilometers, is located at Australia's eastern-most point, 180km south of Brisbane, 800km north of Sydney. It is an area of several very different ecosystems including rainforest and coastal beach, of incredible tourist potential. We visit two very different places in Byron Shire: Byron Bay and Lamington National park (Binna Burra). Lamington National Park is a World Heritage-listed wilderness area that contains Australia's largest preserve of pristine sub-tropical rainforest. The fertile volcanic soils of Lamington National Park now yield a lush environment, home to a large variety of flora and fauna. For thousands of years, Aboriginal people lived in and visited these mountains. Early European settlers also valued the area for its "natural" qualities, and fought to make it one of the first national parks in Queensland in 1915. Lamington is a popular hiking and camping destination for both local and international visitors, where there are numerous different forest types and animals that can be observed up close. At Binna Burra we can think about the potential impact of tourism and other forms of development on native ecologies, and explore a little of how our own visit might or might not contribute to sustainable development of the rainforest. Byron Bay is a coastal surfing community that has emerged as the nerve centre of 'alternative lifestyling' in Australia; it is very different than much of the Gold Coast where high-rises and MacDonald's dominate. Currently, tourists (mainly young Australians) are drawn there for the alternative vibe and the laid back surfing culture. The local city council is heavily anti-development and critical of large corporate businesses, and the whole town appears to have adopted an anti-Big Mac and mega-tourism mantra, and wants things to stay that way. This stance has its roots in campaigns against sand mining that sparked local environment movement in the 1970s. But stresses area starting to show: The anti-development stance has only apparently driven up property values, thus intensifying many of the inherent conflicts over what people can do with their land. Byron Bay is also dependent economically on tourism, has the potential to draw much larger tourist revenue and same seek to capitalize on this. In Byron Bay, we can explore how the idea of Byron Shires' goals for development plays out in both, ecologically, socially, and politically. A major emphasis is on trade-offs: how to decide the right course for 'development' in quite different area areas attractive for tourism. We will also look at how an anti-development stance might have health implications for local communities, especially in how they shape food environments.

Activities: Guided flora and fauna hike, trapping, and plant ID in Binna Burra, frog quest, food environments activity in Byron Bay and the Gold Coast

Section I:

1. Identify 10 floral and 10 faunal species in the Binna Burra rainforest that may have been used by Aborigines prior to European settlement, and identify their probable use. There is no evidence that aboriginal peoples developed agriculture in this region. Why?
2. Identify three floral and faunal species introduced by European settlement. Which species has been the most ecologically damaging and why?
3. If we are to use resources for species and habitat conservation, how do we decide which species are most important? For example, what is the 'value' of a species such as the pademelon or brush turkey? Is the pademelon worth more or less than an endangered spider orchid? Does a "pest" like the cane toad have any value at all?
4. List at least three different definitions of development proposed by different stakeholders in Byron Shire. Are any of the stakeholder groups anti-development? (or are they simply after different forms of development?)
5. How well or to what extent does the commercial operation at Binna Burra meet goals for sustainability as an eco-tourism operation? How should we define "sustainability" in the context of Australian ecotourism, using the cases of Byron Bay and Binna Burra? Which is more successful and why? Does the "eco-" in eco-tourism actually stand for "ecology," or for "economy"?
6. What is the ecological importance of the rainforest locally, nationally, globally (e.g., what is its carbon sequestration contribution? What other ecosystem services?). Is its preservation important beyond its destination as an ecotourism location?
7. How and why might study abroad groups such as ours contribute (or not) to a suitable, sustainable tourist income for Byron Bay and Binna Burra? What issues do the government of Byron Shire and local community members need to consider if study abroad and backpacker visitation increases substantially?

Section II:

Using your food outlet data, quantify and discuss how the food environments of Byron Bay and the more developed Gold Coast are different. What impact would you expect this to have on the health and wellbeing of (a) local community members and (b) tourists? What relevance do your findings have for understanding sustainable development in areas with tourism potential?

Links:

<http://www.planetizen.com/node/12140>

http://www.unesco.org/courier/2000_07/uk/doss27.htm

<http://www.theaustralian.news.com.au/story/0,25197,24188510-2702,00.html>

Readings

Allworth, D. (1985) Subtropical rainforests. In: *Rainforests of Australia*, Chap. 4, (L. Meier & P. Figgus, eds.) Weldon Pty. Ltd.

Low, T. (2001) Ode to a Toad: The Cane Toad Conquest. Chapter 7 in: *Feral Future*. Penguin Books, Camberwell, Australia. p. 46 – 54.

Materials on European and Aboriginal history of Lamington, coastal development, map of Byron Shire.

Plus background readings on:

Binna Burra & Lamington National Park Walking Track Guide, Campsite map

Rainforests, p. 70-73 in: *Lonely Planet, Queensland*, 3rd ed. (2002)

Plant Profile. Practical uses hide behind prickly exterior. Hicks B. (2005) in: *Bush Telegraph*, winter 2005, p. 3 [www.epa.qld.gov.au/parks_and_forests/]

Grey-headed flying fox [http://en.wikipedia.org/wiki/Grey-headed_Flying_Fox]

Lamington, Binna Burra spp lists

Food environment readings and materials

Module III: Water, water everywhere?: Brisbane

Having enough water to provide for basic needs, food, and power to populations is a critical global health issue and central to how we will live sustainably in decades ahead. All countries are now dealing in some basic questions with questions of how to provide their populations with the *quantity* and *quality* needed, and how to balance who gets what, when, and why. The problem is only being exacerbated by climate change, as water supplies become less certain because of draught and other changes from 'normal' weather patterns, and this complicates planning. Urban areas need to find particularly innovative solutions, because they depend on water from elsewhere that other people also have plans to use. Of course, these challenges are especially critical in Australia because it is the driest inhabited continent in the world, as well as being the most urbanized, it also has regular (if not predictable) draughts. Eighty-five per cent of Australians, some 17.6 million people, live in cities. Greater than 90 per cent of national population growth over the next quarter century, an additional 4.5 million residents, will occur in the major cities including Brisbane. For Australia's cities (as for many in the US), achieving the goal of sustainable water management remains the major challenge for the 21st century.

We set our 'water' module in South-west Queensland where Australia's fastest growing population is located, water problems including draughts are part of the physical, social, and economic landscapes, and innovative solutions have emerged. In this module we look at three sides of the 'water puzzle' faced in south-east Australia, sustainable fresh water supply, fresh river water quality, and the health of estuarine ecosystems: all three are of course interrelated. This allows us to explore the historical and current situation with regard to concerns over water quality and quantity, especially for an urban area such as Brisbane, from multiple perspectives, as well as consider what sustainable solutions to provide enough healthy and useable water to a growing population might look like.

One place we will be spending time is on and around the Brisbane River, at the heart of the city. The river is dammed upstream by the Wivenhoe Dam, to control flow and provide the main water supply for Brisbane, and its outlet to the sea is at Moreton Bay, near the airport. Before European settlement, the Brisbane River was a vital food source for the aboriginal people of the Turrbal Nation, a fishing people; it also had spiritual meaning for them. Early European reports suggest rainforest once fringed the Brisbane River. Environmentally, the river is now in a poor condition and has been so for many years, due to excess nutrients, hydrocarbons, pesticides and bacteria; up to the 1930s, the water was very clear and a source of water for drinking and recreation, but also increasingly it was an open sewer and waste dump, and the banks were cleared by tree felling. During the 1800s and early 20th century, the river's surface was periodically choked by large swathes of the noxious weed water hyacinth from South America. We also will be having a look at the remnant ecology of the coast, versus coastal development. The lower river and coastal estuary has several important ecological areas where remnant populations of mangroves can still be seen, recently classified as protected nature reserves. Estuaries are arguably the planet's most valuable ecosystems. With approximately 36,700 km of coastline, Australia boasts around 1,000 estuaries, and many of these show telltale signs of degradation. Mangroves are in many ways a critical species for both sustainable ocean and land in the decades ahead. Over the past two centuries, the health of our river systems and estuaries globally has gradually declined due to a range of influences, including salinity, sedimentation through soil degradation, loss of biodiversity, altered flow regimes, toxic algal blooms and declining nutrients and water quality. Queensland provides a very standard example of this that we can examine.

In terms of fresh water supply, Queensland and Brisbane have water use plans in place, many of which are very well developed and successful, but conflicts between stakeholders can be very hard to solve because the demand is so much greater than supply. Businesses need water for basic industry. Agriculture, is a backbone of the Queensland economy (sugar being one major crop), but many forms use very large amounts of water and/or damage the waterways so the water is not available for other uses. Energy production that depends on water is another potential stakeholder, but not without costs to water quality and quantity. Ozzies also have cultural ideas about rights to water, such as who is responsible and what their rights to water are as individuals and communities; recreational use of water is an important element of contemporary Australian society that need to be factored in. Clearly, trade-offs have to be made in how water is used, and these are nested within broader political, cultural, and economic debates about what the priorities are, including who should have the ultimate say. Technological solutions are being sought to improve supply, and some are globally cutting edge, including large scale desalination,

more efficient land-use practices, and new water re-use technologies. These of course in term need to be both economically viable and socially acceptable.

Activities: Citycat travel, visit Gold Coast desalination plant at Tugun, (Moreton bay river outlet behind airport plus Boondalls/Nudgee), Wivenhoe Dam/ Power Station, independent visits to Museum of Brisbane, possible river tour/workshop, ethnohydrology interviews. Could also work for a day on Straddie etc looking at pre-devt ecosystems.

Lectures: (1) water sources and management in southeastern Q'land/Brisbane, (2?) (coastal ecology and sustainability/mangroves, estuaries, coastal devt on Moreton bay and Gold coast), (3) cultural meanings of the river, perhaps history of Brisbane and/or climate change in Australia, (4) perhaps a basic river ecology talk/demonstration on the river (e.g., flood plain, introduced spp, measuring water quality etc).

Possible Lecturers: <http://www.awmc.uq.edu.au/index.html?page=68425> Paul Lant teaches water and sustainability and water policy and governance.

A/Prof Catherine Lovelock, UQ *Coastal plant processes*

<http://profiles.bacs.uq.edu.au/Catherine.Lovelock.html> does coastal mangrove ecology. (LS: I met with her in maybe 04/05 to talk about barrier reef access through UQ you may recall. She is a very close colleague of Mandy the academic director of UGA Belize who I worked with some and was on that mangrove grant we wrote with Mandy for the multi site study abroad mangrove initiative. She may or may not remember me but she should recall the UGA connection. She's very nice, anyway.)

Sylvie Shaw. <http://uq.edu.au/hprc/index.html?page=77592&pid=0>. writes on religion and rivers, probably can talk about cultural aspects of the river.

Also note "The Integrated Water Management suite of programs is taught by lecturers from four internationally recognised Australian Universities: The University of Queensland, Monash University, The University of Western Australia and Griffith University"

Podcast lectures: ethnohydrology, climate change, and water (AW); defining and assessing sustainability, esp urban (KS); water and sustainability (?); water and the health of populations (RA?); concept of environmental justice (CGB); amazing mangroves

Readings needed: areal water management plan; history of the river and Brisbane; water user rules and regs; map of Brisbane population and watershed; water quality measures for Brisbane River and coast; (ecology and historical ecology of Moreton Bay); climate change in Australia

MODULE QUESTIONS

1. [If go to Moreton Bay/ Boondalls wetlands.] How has development changed the ecology of (the Brisbane River and) Moreton Bay coast since first settlement, and how has this impacted the quality of fresh water, seawater and associated natural resources (e.g., fish availability) over time?

What are now the main fresh water sources for Brisbane city, both everyday and emergency? What are the main factors shaping the vulnerability of Brisbane to water shortages over the long and shorter term (e.g., historically versus seasonally and inter annually)? Who are the major groups of stakeholders related to management of water access in Brisbane? (identify these at a number of different levels) How do different perspectives and priorities of different groups of stakeholders lead to conflict over water? Why or why not s the current water management strategy 'sustainable' in Brisbane and Queensland?

2. How does the layout of the current city of Brisbane relate to water quality in the Brisbane River from its sources to its outlet in Moreton Bay? What are the major challenges to maintaining water quality at minimum healthy levels in the river (for drinking, recreational use, etc) in Brisbane/Queensland? *Who* is most at risk from the effects of poor water quality in the river right now? Does the pattern of risk conform to predictions from environmental justice, and why or why not?

3. Based on your ethnohydrology interviewing experience, consider: How do Ozzies in the street think about their water? For example, where does responsibility for managing water lie? What 'rights' do they think they should have related to water? Do they perceive problems with their water supply (quantity and quality)? Do they think that water restrictions are important to impose and fair, or not? Would people in your home town (Phoenix or other) react similarly to restrictions? Why or why not?

LINKS

http://www.brisbane.qld.gov.au/BCC:BASE:1667977668:pc=PC_2162 (current fines and restrictions)

<http://www.qwc.qld.gov.au/High+Level+Restrictions>

Water in a dry land:

<http://www.environment.gov.au/water/publications/environmental/groundwater/waterdryland.html>

<http://www.nrm.gov.au/>

<http://www.environment.gov.au/water/publications/quality/betterwater.html>

http://www.precisioninfo.com/rivers_org/au/library/nrhp/estuary_review/

http://www.epa.qld.gov.au/environmental_management/water/water_quality_monitoring/assessing_water_quality/water_quality_data/

<http://www.griffith.edu.au/environment-planning/australian-rivers-institute/resources/queensland-smart-water-research-facility>

map river users and cleanup

<http://www.seqwater.com.au/content/standard.asp?name=WaterCycleAndOurResponsibilities>

water quality issues

<http://www.seqwater.com.au/content/standard.asp?name=WaterQualityIssues>

<http://www.ourindooroopilly.com/brisbane-history.html>

Module IV. Inland Queensland and Carnarvon Gorge: Indigenous Relationships with the Environment

Australia has had a unique, distinct, and evolving ecology for a very long time, and human colonization of Australia has resulted in the longest continuous single cultural occupation in world history – some 50,000 to 80,000 years. Thus, Australia is a very unique case of human-fauna-floral co-evolution, as well as a special case of a set of cultural beliefs and behaviors that emerge from millennia of intimate human-environment interaction at the local level.

Aplin (2002) argues that Aborigines *live with the environment, not against it*. His, and other readings in this module section, provide testament to the various ways in which the indigenous peoples of Australia relate to their surrounding environment. Technological applications, environmental knowledge, and material uses of resources are the focus at Carnarvon with the contention that Aboriginal practices (including fire, gardening, and medicinal applications) were largely sustainable. As you spend time in the unique environment of Carnarvon Gorge, consider the rich and long-term history of human presence in the area and contrast that with contemporary human uses of the region (including tourism and agriculture).

Readings

- Aplin, G. (2002) Traditional Aboriginal Use and Management. Chapter 8 in: *Australians and their Environment*. Oxford University Press. p.232 – 249.
- Flannery, T.F. (1994) Sons of Prometheus. Chapter 21 in: *The Future Eaters*. Reed New Holland, Sydney. p. 217 – 236.
- Flannery, T.F. (1994) So Varied in Detail, So Similar in Outline. Chapter 25 in: *The Future Eaters*. Reed New Holland, Sydney. p. 271 – 291.
- Flood, J. (2000) Introduction to Australian Rock Art. Chap. 3, p. 28 – 35 in: *The Riches of Ancient Australia*. 3rd ed. University of Queensland Press.
- Reardon, M. (2004) Too many roos. *Australian Geographic* Jan-Nov. p. 86 – 97.

Plus additional readings on:

Carnarvon Gorge Park Guide brochure

Butz, T. (undated) What is a boomerang? <http://www.boomerang.org.au/articles/article-what-is-a-boomerang.html>

Cosgrove, R. (2005) Coping with noxious nuts. *Nature Australia* 28 (6), p. 46 – 53.

Carnarvon Gorge Workbook on Boolimba Bluff

Fire as a wildlife habitat management tool. Moran, C. & P. Watson. *Land for Wildlife* Note No. 14, July (2000)

Module Questions

1. The British claimed Australia to be “Terra Nullius”, in part because there was no evidence Aboriginal peoples managed their land. In fact, native peoples practiced extensive management over nearly the entire continent using fire-stick farming. The land viewed by the First Fleet was not “untouched” but rather, highly manipulated and evolved through periodic burning. (a) Describe at least three applications of fire in Aboriginal culture and how these applications influenced the environment. (b) Describe at least three applications of fire by European settlers in Queensland. (c) Compare the Aboriginal and European use of fire and subsequent land use within the context of environmental sustainability.
2. (a) Document the specific ways in which humans have altered and shaped the landscape of Australia over the past 50,000 years or so. (b) How did technological innovations and choices of indigenous groups living in areas such as Carnarvon reflect the particular environmental limitations and opportunities found there? Give at least 3 examples of technological innovation (broadly conceived, i.e., more than just hunting tools).
3. How might explanations of the cave art in the Gorge reflect our own world view as much or more than those of the people who made this art?

[For the next question, refer to the Carnarvon Gorge Workbook on Boolimba Bluff]

4. a) Suppose that the Moolayember Formation was not watertight and did not interact with the Precipice Sandstone to form springs nor push the water table above ground. Describe what differences this would have made, or would make, to pre-colonial and contemporary Australians utilizing the region of the Gorge. (b) If the Precipice Sandstone eroded in the same manner as the Evergreen and Hutton formations, leaving behind a deep valley rather than a gorge, what human use would Carnarvon Gorge have served pre-colonially? (c) What human use would the Gorge serve today? (Do you think it would still be a National Park under those circumstances?)

5. In summary, how sustainable was the pre-contact Aboriginal lifeways? What lessons (a) have and (b) could be applied to current development in Australia and elsewhere?

Notes: How to Ace your Modules

Our programs use field modules as an instructional approach to introducing topics of study. The module approach relies heavily on short essay answers to complex inter-related ecological, environmental, cultural, and social issues related to sustainability. This is a writing-intensive approach to study that requires the student to have (1) a clear understanding of the question and responses and (2) the ability to formulate those responses in a concise and non-redundant manner. We believe that reading, writing and communication skills are critically important to not only succeeding in university but also once in the workplace. Those who speak and write well are at a clear advantage..

Each module relates to a specific theme and/or geographical location and consists of (a) a background/introductory narrative, (b) related readings and other associated material, and (c) approximately 2-4 questions. The following guidelines are applied to grading and assessing your work:

1. Each question (comprised of all parts) should be answered using a limit of 250 words written clearly, succinctly, and legibly. Your response will be graded on appropriate content, grammar, and presentation. Do not repeat the question as part of your answer.
2. Any references other than from the readings listed with the module (a) are encouraged (to be included as citations in the body of the essay) and (b) must be included in a references section (not included in the 250 word limit). Such references include all forms of personal communication (from lecturers, faculty members, field guides, etc), information available during field trips (for example, visitor centers), and/or incidental/additional material collected during the program (from libraries, tourist shops, etc).
3. There is an automatic 10% penalty for exceeding the word limit and only the first 250 words will be graded.
4. If there are multiple parts to each question (e.g., 1a, 1b, 1c, etc), give equal weight to each part.
5. Unless specified otherwise, all module questions receive equal weight in the final assessment.
6. Answer each question on one side of a single sheet of paper and include the references on the reverse side. You should not include references for readings that are already included as part of the module question (though you can/should cite the author(s) of these readings within the body of the essay) – use the reference section only for additional sources not included as part of the module question. Write your name and question # at the top of each sheet of paper.

The module approach is probably unlike most other approaches to teaching and learning that you have experienced on campus. In most campus classes, you are taught and you learn through lectures in a somewhat linear fashion with one class building upon another. The module approach is more like doing a mosaic in which the complete picture only gradually comes into focus as more and more pieces of the mosaic are put into place. When the last piece of the mosaic is in place, the picture is complete, and you can see the complex and multifaceted nature of what you have created. To push this analogy a little further, the pieces of the mosaic are like pieces of information, and the complete mosaic is the knowledge that you have gained of the subject.

You will likely find this approach confusing and even frustrating early on. Where do I find the pieces of information? Where does this piece fit? *Does* this piece fit? How does this piece relate to the overall topic? These are all legitimate questions, and questions that you will have to keep asking yourself and discussing among classmates. Despite some initial confusion (perhaps like the confusion when confronted with a jumble of mosaic pieces), we believe that the module approach has numerous advantages, especially for teaching and learning within the context of a field-oriented study abroad program. Perhaps the single greatest advantage of this approach is that it is an active approach. You are actively engaged in finding the pieces of information from multiple sources. True, one of these sources is the traditional classroom lecture, but there are also mini field-lectures, class discussions on the road, informal conversations with field faculty, meetings with specialists and professionals, and direct experience and observation, as well as the related readings. The module approach obliges you to be an active learner, an active participant in the learning process. In practice, this means listening and looking, taking good notes, asking good questions, and generally taking advantage of all of the resources and opportunities you encounter. It is a way of learning that is far removed from the taking and regurgitating of lecture notes. The module approach will be novel and challenging for most students. However, if you embrace it you will also find it a highly

satisfying way of learning. Indeed, you may even find that it influences the way in which you look at the world around you and learn beyond this particular study abroad experience.

Tips for writing concise responses

1. It is arguably more difficult to write essays of 250 words than 1000 words. As a result, write short, concise sentences and avoid quotations. Develop a skeletal outline of your essay, write your answer out, and then rewrite to get within the 250 words limit.
2. Ensure that your sentences flow – don't abruptly change topics. Do not simply provide a chain of undeveloped (or unsupported) facts that are simply reiterations of lectures and/or readings. You can use facts/data but they must be substantiated and fit within the context of the story you are writing.
3. Make a statement, support that statement, and provide the "so what". This shows that you can conceptualize and see "the big picture."
4. Avoid writing about things, and using technical terms about which, you don't understand. Your lack of understanding will come through and affect your grade. If you are confused or don't understand something, ask.
5. Most importantly, answer the question.

Written & Oral Reflection Statement

Each student will prepare and then orally present in class a short (less than 2 page, less than 2 minute) summary reflective statement on their personal values and plans in relation to human dimensions of sustainability.

Writing a reflection statement is in many ways an act to reveal one's beliefs, and in a way that can inform and shape our future actions. This is our goal here. Each student will prepare a written reflection statement regarding their personal values and plans related to sustainability and how their experiences on the program may have helped shape this. How you tackle this challenge is up to you, but what we are looking for is a statement that shows evidence of careful thought and clarity of expression, realistic self-awareness, the acknowledgement of doubts and the effort to resolve doubts, thoughtful integration of concepts and propositions we have explored in the class with one's own personal philosophic and ethical positions, articulation with longer term goals. It is important not to slip into simple narrative or focus on issues that are only related to you: the notion of what is sustainable and how to reach that goal raises some very troubling, complicated, and dramatic questions – such as issues of economic, national, or ethnic privilege - and you want to be grappling rather with your relationship to such large questions – that is, with your place in a broader world and how you might best understand and engage with it. Of course, there is no right or wrong position one can take in writing a reflection statement, since it is a personal expression, but there are statements that are more thoughtful, well-developed, articulate, and interesting. Reflection statements can be difficult to write. You will need to consider in your own personal and professional terms what your 'story' and position are, think clearly about academic and intellectual issues we have explored in the course, and then work to integrate the two. The goal is not an exhaustive investigation, and specific conclusions may or may not be present. Successful reflection enables self-awareness, and personal and professional growth. To get you started, you might want to keep a running 'shoe box' of ideas and thoughts that come to you through out the class. When you sit down to start writing, identify a few points that you wish to develop – perhaps no more than 3 or 4. Try to get to the heart of your discussion quickly, and maintain focus. The more drafts you write, the better the statement will be.

Ethnohydrology Exercises (Wutich)