Habitat Conservation and Mountain Ecosystems: The Nepal Program
Fall 2018
September 22 – November 4

ACADEMIC SYLLABUS

Faculty:
Chris Carpenter, Ph.D.

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 are happy to oblige.

Class Meetings: This Wildlands Studies Program includes seven days per week of instruction and field research, with a little bit of free time on most days. While in the field, we may schedule a few rest-days, but there will be academic work to do on those days as well. 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 6:00am and finish at dusk, with breaks for meals. Class presentations are usually scheduled for the late afternoon, and we try to keep the evenings free for discussion or study. When in the backcountry or at a field site, our activities may start as early as 4:00am or end as late as 10:00pm (e.g., for wildlife observation). It is necessary to be flexible and able to accommodate a range of class schedules.

Course Credit: Wildlands Studies students 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 437A, Environmental Wildlands Studies (5 quarter / 3.35 semester credits)**
   Field-based course studying the environmental problems affecting the natural and human-impacted ecosystems of our study region, including the role of human interactions.
2. **ESCI 437B, Environmental Field Survey (5 quarter / 3.35 semester credits)**
   Field-based course conducting on-site examinations and analyses of environmental problems affecting wildlands and wildlife in our study region.
3. **ESCI 437C, Wildlands Environment and Culture (5 quarter / 3.35 semester credits)**
   Field-based 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: We will send you a Course Reader about a month before the program starts via email with a link to Dropbox.com where you can download the Reader. Readings include selections from academic primary literature, book excerpts, technical reports and other documents. Field guides and textbooks supplement our field activities and are an important source of information. While in the field, we will carry a shared reference library of useful texts and articles, either on paper or on an electronic device.

Contents of this syllabus:

I. Program Overview

Our Wildlands Studies Nepal Program involves two extended field study excursions into the foothills and high mountains of eastern or central Nepal. Specifics for our field study locations will be provided closer to our start date. We will start our program in Chitwan National Park, in the lowlands of Nepal, known for its subtropical ecosystem and rare, charismatic mammal and bird species like rhinoceros, sloth bear and Old World vultures. Chitwan offers us a fine introduction to wildlife and wildlife management in Nepal.

We then relocate to study sites in the roadless backcountry of eastern and central Nepal. Our program area will embrace some of the highest Himalayan summits, which exceed 26,500 feet elevation. Because the Nepal Himalaya is so steep and tall, it is possible to trek into places where subtropical river valleys cut between ridges and summits whose upper elevations hold permanent ice fields. Our field excursion, primarily on foot, will begin at middle hill elevations (3-5,000 feet), where there is a strong cultural component and an opportunity to learn about traditional farming methods as well as lower elevation habitats and the wildlife they support. After some days at the lower elevations, we plan to ascend to the conifer and rhododendron forests and the alpine realms for which the Himalaya are renowned. If time and weather permit, we may proceed to one of the mountaineering base camps at the fringe of large, active glaciers. The ecological amplitude present in this area, an unbroken transect from near tropical to ice-bound, offers the potential for fascinating and informative ecological field studies.

Much of our field study will focus on the biological and physical geography of critical Himalayan habitats and the wildlife – plant, insect, and vertebrate – that depend upon them. Fall is harvest season, and there are many festivals at this time of year. Fall weather also tends to be relatively stable, which means dry, sunny weather much of the time. Even so, we need to be on guard for early winter storms. Rivers flow full and clear in this post-monsoon season, and some migratory water birds like Bar-headed Geese may be inbound across the Himalaya, seeking their winter habitat on the plains of Northern India. Wild mammals are rare, or at least they are very difficult to spot in this steep and thickly vegetated landscape, but they are present and we may be able to glean information about their habits and distribution by looking for signs of their presence. Meadowed alpine slopes support a growing population of wild Himalayan tahr and blue sheep (spoiler, not really blue) that feed a small population of snow leopard and we may see evidence of both. Additionally, a group like ours, with mobility and time in the field, can provide useful information about habitat conditions and resource abundance for focal wildlife species, both plant and animal.

Human ecology is very important to understanding the Himalayan region. The Himalaya of eastern and central Nepal is inhabited by several distinct ethnic groups including Tibetan, Sherpa and Tamang people who came from the Tibet Plateau in recent centuries, and communities of indigenous Kirati people like the Rai and Limbu whose ancestors have resided here for much longer. We will plan to meet villagers whose subsistence lifestyles range from settled, terraced agriculture at the lower elevations to pastoralism in high inner valleys. Lifestyles are changing rapidly in the eastern Himalaya, as they are everywhere, and some of the anthropological generalizations that may have been apt in previous decades no longer ring true today. This bears importance to our field study because the evolving lifestyles in the region may dramatically affect sustainability.

Days begin early, with fieldwork or trekking if we need to move camp. Some days are physically demanding, but we try to pace the activities so that there is enough time to see and learn as much as possible. In the course of a day, we may

meet with local people, observe wildlife, or follow up on the types of interesting and unexpected field observations that are frequent in the Himalayan backcountry. Later in the day, we will recap and review our progress, and there will be a presentation or group discussion on some aspect of Himalayan ecology. There will be regular assigned readings, and each student will be responsible for giving one presentation to the group on a topic of interest to them. As mentioned, we'll carry a compact, portable library of documents about the Himalayan region and one tent big enough to hold the whole group when we want to have class and its cold or raining outside.

II. Learning Objectives

Classroom learning can give the impression that different areas of knowledge are isolated from one another. In the field, the boundaries that separate 'subjects' like wildlife, climate, earth science, conservation, and cultural ecology tend to melt away. With some guidance, this information – in its raw, wild and unparsed form – can really enhance and vitalize subjects that may seem dry in a pure classroom context. The physical, biological and cultural environment of the Himalaya is our text, and our primary academic objective is to teach team members to read this text critically and well.

One focus in this program is for students to learn firsthand about the physical geography and biological ecology of Himalayan habitats that are biologically diverse, limited in distribution, and hold great conservation significance. Examples include rich temperate broadleaf forests, subalpine conifer forests, and alpine habitats that contain glaciers coming from some of Earth's highest mountains. These habitats support 'flagship' mammal species like red panda (present at low density at the wet, middle elevations), blue sheep and Himalayan tahr (abundant in the alpine meadows and periglacial habitats above 13,000 feet elevation), and snow leopards (a top predator at the alpine elevations). With the exception of the blue sheep and tahr, these species are very difficult to observe in the wild; however their sign may be evident in the form of tracks, scat, and nesting sites (for the red panda). Our field studies will not target particular species, but instead we will focus on the habitats required for the survival of these and other wildlife species and the conservation measures that may or may not be effective in ensuring their long-term survival.

The lifestyles of the mountain people in eastern Nepal are both fascinating and ecologically informative. How might a family keep the monkeys out of their cornfield, or get water to a patch of good land that happens to be at the very top of a hill? When does it make sense to use dung for fertilizer or to burn it as cooking fuel? How does a community decide which forest resources to exploit and which to conserve, and how much does each family take for itself? What do you do with crop surpluses when the nearest market is a three-day walk on a twisty mountain trail? Why have so many kids? How do you manage agricultural risk when crop failure can mean displacement or famine? How does road construction into your homeland affect lifestyle decisions of your family members? Confronting these issues and exploring solutions together with the local people provides a learning experience that is simply not available in a more conventional academic setting.

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

1. ***Ecology of Mountain Environments***. How the physical environment controls patterns of species richness and endemism. How organisms and communities specialize to the extreme conditions of the high Himalaya. Students will also gain knowledge about how the large elevation gradient in this region creates disparate environments and influences adaptation.

2. ***Ecology of wild vertebrates (mammals and birds) of the eastern and central Nepal Himalaya***. The Nepal Himalaya is a center for bird diversity and supports several range-restricted bird species. It also supports several rare mammal species like snow leopard, blue sheep, and red panda. The ecology and distribution of these species and the conservation of their habitats will be one special area of emphasis during this program.

3. ***Wildlife Management***. Studying habitat and conservation methods employed to protect wildlife in the Himalaya of eastern and central Nepal, we will learn important principles that underlie effective community-based conservation. Our visit to Chitwan National Park at the beginning of the program will provide another good opportunity to learn about wildlife conservation in Nepal.

4. ***Physical geography of the Himalaya***. Processes of mountain building (orogenesis) and erosion are expressed vividly in the dynamic Himalayan landscape. Students will learn how tectonic activity and the powerful South Asian monsoon feed back on one another to control landscape evolution in the Himalayan region.

5. ***Human ecology***. Mountain valleys of the Nepal Himalaya are some of the most culturally diverse regions of Asia. Several distinct languages may be spoken in the same river valley and local people display a profound depth of knowledge about the environment in which they live. Systems of agriculture are highly evolved and locally diverse due to the absence of roads, and subject to change as road construction has begun in many areas. Immersed in the culture and working alongside local residents, our students will gain significant appreciation and understanding of the mountain peoples of the Nepal Himalaya.

6. ***Mountain hazards, poverty and development***. Subsistence agriculture is still important in the Nepal Himalaya, but ongoing road construction enables cash crop agriculture and a range of economic alternatives, each with different environmental outcomes. Our experience over two decades in this region will provide students with a unique insight into these trends, which are so pervasive throughout the developing world.

7. ***Strategies for community-based habitat conservation***. Nepal promotes the idea that natural resources are managed best by local stakeholders. In the mountains of Nepal we can take a critical look at how effectively these ideas are being put into practice.

8. ***Nepal area studies***. The landscape, culture, and history of Nepal is fascinating in its own right, and it also provides valuable insights into what can go right and wrong as a small state develops under the influence of wealthy donors with their own agenda.

9. ***Field identification of flowering plants.*** We will use field guides and local expertise to identify plant species that occur at various elevations in our study area, including semi-deciduous forests at low elevation, broad-leaved evergreen forests at middle elevation, and subalpine and alpine habitats at high elevation.

10. ***Historical studies through photo-replication.*** Replicate photography (comparing old images with new ones) is a powerful method of inferring recent historical change, but it needs to be done with proper attention to the details of site location, documentation, and camera technique. Course instructors have experience with these methods and will incorporate them into the program when possible.

These topics will be addressed through structured presentations and discussions, course readings, field activities, visits with local experts, exposure to ongoing research, extended backcountry excursions, and field research projects. The course generally progresses from faculty-led instruction in the beginning (i.e., lectures and readings) to student-led critical evaluation, analysis, and synthesis in the latter part of the course. Our overarching goal is to have students leave the course not only with extensive knowledge about this particular region, but with broader skills and understanding of ecological, geological, and social sciences, which will allow them 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, introduced on page 1:

ESCI 437A, Environmental Wildlands Studies (5 quarter / 3.35 semester credits)
Field-based course studying the environmental problems affecting the natural and human-impacted ecosystems of our study region, including the role of human interactions.

Experience/Activities: This course will teach students about the physical and biological environments of the Nepal Himalaya. We will focus on the biological ecology of this area, with special emphasis on how ecosystems change with elevation. These changes are functional (morphology and phenology of dominant plant groups, relative importance of invasive species) and taxonomic (biogeographical affinities of the dominant groups). These changes are expressed at the

community level, with measurable changes in species density along the elevation gradient for many apparent groups, such as birds and vascular plants. We will also consider physical geography, in terms of landscape evolution, in a tectonically active (rapidly exhuming, rapidly eroding) mountain region, and discuss some of the fascinating new insights regarding the interplay between orogenesis (mountain building) and atmospheric processes. Mountain climates and the critical role of the South Asian Monsoon is another important subject we will examine. Sometimes landscapes in the Himalaya change catastrophically with glacial lake outburst floods and massive landslides.

Outcomes: Students will learn how the composition of an ecological community and the characteristics of its component species relate to environmental variables that change with elevation. Students will learn to recognize typical mountain habitats in the Nepal Himalaya, including subtropical, temperate, and subalpine forests, alpine rangelands, and periglacial habitats, and to understand how these differ ecologically from their counterparts in Europe and North America. Students will be instructed in methods of field observation and how to recognize important taxonomic groups in this diverse part of the world. We will also consider the natural history and ecological impact of invasive plants. At higher elevations, we will consider the ecology of Himalayan tahr, blue sheep and their predators, the snow leopard and the common leopard. We will also evaluate how severe, high elevation climates and distinctive mountain processes, like landslides and stream erosion, affect the ecosystem. The Himalaya are an ideal place to learn about dynamic processes of mountain building through plate tectonic activity because these processes are very much at work in the Himalaya today. Instructors will teach the students through structured presentations, but students will also learn through direct observation and informal discussion.

Evaluation/Assessment: Students will receive two examinations and one or two short quizzes. Each student is also expected to give an oral presentation to the group. Success will require consistent attendance and motivated participation in class activities. Students are expected to demonstrate knowledge of ecosystems, natural history, important species and natural processes. Students will also work together to keep a species list of selected plant and animal taxa encountered in the different elevation zones we visit.

Examinations and quizzes 70%; Oral Presentation 30%.

Textbooks: Course reader, species identification manuals, taxonomic keys, reference books and articles.

ESCI 437B, Environmental Field Survey (5 quarter / 3.35 semester credits)
In this field-based course we conduct on-site examinations and analyses of environmental problems affecting wildlands and wildlife in our study region.

Experience/Activities: Those students enrolled in the Wildlands Studies program in the Himalaya have, with their instructors' help, been collecting data on the forests of this region for nearly two decades. This represents a significant data set that has led to several peer reviewed publications[1,2,3], and which adds value to understanding the ecosystem processes at work in this mountain region. This fall, we focus these efforts on an assessment of forest habitat at elevations that range from 3,500-13,000 ft, where eastern and central Nepal hold some of the most diverse temperate forests on Earth. Students will contribute to this effort by identifying focal tree species and estimating plant species richness and habitat quality in forest plots located at various elevations. These forest plots will be located by means of GPS, and photographs will be taken for future comparisons. We know from experience that this project is both demanding and valuable for students. It also provides students with the opportunity to observe and understand the forest ecosystem in more detail than they might otherwise.

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[1] Author(s): Chris Carpenter and Robert Zomer. 1996. Forest Ecology of the Makalu-Barun National Park and Conservation Area, Nepal. *Mountain Research and Development* 16(2): 135-148.

[2] Chris Carpenter. 2005. The environmental control of plant species density on a Himalayan Environmental gradient. *Journal of Biogeography* 32: 999-1018.

[3] Carpenter, Chris, Ken Bauer, Ramesh Nepal. 1995. Report on the Flora and Fauna of the Kanchenjunga Region (II). *World Wildlife Fund Nepal Program, Report Series #14*. Kathmandu, Nepal.

Outcomes: Students will conduct structured fieldwork including data collection and analysis as described above. This will require participation in instructional presentations, a mastery of equipment and techniques commonly employed by ecologists working in the field, and an overall understanding of the relevance of the task. Students will work together in teams to complete this part of the course, but each student will have specific responsibilities. Students will become acquainted with the tree flora of the eastern Himalaya in order to identify common taxa to the genus level. Since these taxonomic groups occur in mountains worldwide, and since plant identification skills are globally applicable, the skills learned when we study Himalayan forests will make the students better field biologists wherever they work in the future. Students will also improve their ability to infer mammal distribution and behavior from indirect evidence such as footprints and scat.

More generally, students will obtain a practical understanding of ecosystem processes and how they are affected by the many disturbances that occur in the Himalaya, both 'natural' and anthropogenic. These practical insights will be used as a platform to facilitate discussion about future trends in wildlife conservation, especially how ongoing change in atmospheric composition is likely to affect the mountain ecosystems, either through temperature change or changes in the intensity and timing of monsoon rainfall.

Evaluation/Assessment: Students will receive two examinations and one or two short quizzes. Success will require consistent attendance and motivated participation in class activities. Students are expected to learn and apply their knowledge of ecosystems, natural history, focal species, and natural processes to data collection efforts in the field. These efforts include surveys of plant diversity, observation of mammal signs, and a basic understanding of how invasive plant species change Himalayan ecosystems. Students will be responsible for keeping accurate records of focal plant and animal taxa they encounter within the project area.

Examinations and quizzes 40%; participation in field assessment of forest habitat 40%; participation in analysis of forest habitat 20%.

Textbooks: Course reader, technical literature, field identification keys (both published and those prepared by course instructors), articles and working papers prepared by course instructors.

ESCI 437C, Wildlands Environment and Culture (5 quarter / 3.35 semester credits)
Field-based course involving on-site research 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.

Experience/Activities: This course will consider the human component of the Nepal Himalaya, as manifested through traditional cultural institutions, environmental management practices, and anthropogenic impacts on the ecosystem. Students will work and travel together with members of several indigenous culture groups, and learn about their traditional ways and the manner in which they are transitioning into a more modern and globalized society. These people include Sherpa and ethnic Tibetans who inhabit the higher elevations, Kirati groups of the middle mountains, including the Rai and Limbu, as well as more recent migrants from other parts of Nepal. Local environmental impacts are manifold. Examples include road construction and the conversion of traditional agriculture to cash crops. Tourism infrastructure is also beginning to affect life in the hills. Students will have frequent opportunities to observe these phenomena, which will provide an important foundation to both structured class presentations and impromptu discussions.

We will consider global impacts and their effect on the Himalayan environment, taking note of the fact that the water catchment and soil erosion of this area can directly affect the lives of more than a billion people who inhabit the plains downstream. The effect of climate change on the Asian monsoon is of particular concern. Evidence shows that monsoon rainfall has become more sporadic in recent decades, but theory to support and model this empirical observation remains very rudimentary. The effect of climate change on Himalayan glaciers is another significant, contentious topic that we'll explore during the course.

The regions of Nepal where our program will take place are developing a solid tradition of community forestry, community based conservation, and tourism management. There are many obstacles and challenges to effective resource management at the community level, but local stakeholders are knowledgeable and invested in the health of their environment. The progression of this idea of community-based conservation is a fascinating case study in sustainable mountain development. Program members will work in teams to compare the current situation to observations made by previous groups of Wildlands Studies students that visited Nepal in the 1990s. We hope that this comparison to our pre-millennial baseline will provide useful insights about how to effectively manage the mountain regions of Nepal.

Outcomes: Students will confront the differences between how Western visitors to the Himalaya idealize the culture and the reality of what it is like to practice a subsistence lifestyle on steep slopes or to transition from a heritage in the mountains to a new livelihood based on wage labor and urban values. Students will learn the history (and pre-history) of Himalayan cultures, how different groups originally settled their homelands, and a sense of the various skills required to endure in this landscape for generations. Students will come to understand why mountain people tend to be risk-averse and how much stamina and intelligence is needed for a self-sufficient mountain lifestyle.

Since this course considers human ecology, structured learning for this course will include presentations by course instructors, supplemented by discussions with local experts, national park managers, and stakeholders in the communities that we visit. Students will gain experience interviewing local people (in translation), and learning how to frame a useful question in this context. Students will read from the peer-reviewed literature on the local impacts of anthropogenic disturbances both regional and global in scale, and evaluate contrasting positions in the debate as to whether hill slope agriculture contributes to down slope erosion (a big, contentious subject among scholars of Himalayan resource management). Students are required to be engaged during the discussions, to do the readings, observe the purported impacts with a critical eye and learn skills of field appraisal.

Evaluation/Assessment: Students will receive two examinations and one or two short quizzes. Success will require consistent attendance and motivated participation in class activities. Students are expected to interact with local people, both among our staff and residents in the villages we visit, and to make critical, but non-judgmental, observations of local customs and land-use practices. We will share these ideas and students may write short essays on this subject.

Examinations and quizzes 40%; participation in field study comparing the current situation in eastern Nepal to that of the late 20th Century 30%; participation in discussions and workshops that focus on the cultural component of the eastern Nepal Himalaya 30%.

Textbooks: Course reader and peer-reviewed literature from the class library.

IV. Assessment

The following is an overview of the academic requirements for the program. Some of the assignments are ongoing (student presentation, course readings, and field studies); others have specific dates (midterm and final examinations). Due dates will be reconfirmed (or may be adjusted) once the course begins. Final grades for each course listed above will be based on the following items:

Course Number	Assessment Item	Date Due	Percent of Grade
ESCI 437A	Mid-Term Examination	14 October	30
	Final Examination	2 November	30
	Short quizzes	TBA*	10
	Oral Presentation	Variable**	30
ESCI 437B	Mid-Term Examination	14 October	20
	Final Examination	2 November	20

	Participation in group field project (middle elevation and alpine habitat)	~13 October	40
	Participation in data analysis	~1 November	20
ESCI 437C	Mid-Term Examination	14 October	15
	Final Examination	2 November	15
	Short quizzes	TBA*	10
	Participation in group field project (management comparison)	~29 October	30
	Participation in data analysis (management comparison)	2 November	30

*Quiz dates are at the instructors' discretion, and may or may not be announced in advance.
**Dates of each student's oral presentation will be assigned at the beginning of the program

Quizzes will cover material that has been presented in recent days. They will be of short duration and may or may not be pre-announced. We anticipate that there will be one or two quizzes during the program. Examinations are based mainly on presentation material, including presentations by course instructors, guest lecturers, and fellow students. An understanding of material from the readings may also be required to gain full credit. Examinations are 'closed-book' and consist mainly of objective questions, with a few longer, more subjective questions in which students are asked to evaluate an issue. Students are not time-limited on the exams. Exams are graded anonymously.

We hope to complete two group projects on the Nepal Program. The first will be a survey of forest habitat, including vegetation transects, species inventories, and interviews with local villagers whose lifestyles may be of significance to habitat conservation. The second project will be a comparative study, based on replicate photography and past field notes, of trail and tourism infrastructure in the mountains of eastern and central Nepal today versus twenty years ago. Field data will be collected by students working in small teams under the supervision of course instructors and local specialists. Data will be compiled by team members, and we hope there will be time at the end of the program to perform an initial analysis of our results.

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:

Letter grade	Percentage
A	92.5- 100+
A-	90.0- 92.4
B+	87.5- 89.9
B	82.5- 87.5
B-	80.0- 82.4
C+	77.5- 79.9

Letter grade	Percentage
C	72.5- 77.4
C-	70.0- 72.4
D+	67.5- 69.9
D	62.5- 67.4
D-	60.0- 62.4
F	< 60.0

VI. General Reminders

Academic Integrity is as relevant in this field study 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 program. Because of the demanding schedule and limited time, all components of the program are participation-mandatory (unless indicated) and missing class can impact your grade. Therefore, it is important to be prompt and prepared with needed equipment for all activities.

VII. Academic Schedule

The following schedule is only a general template. It will be updated and may change as we flesh out program details in coming months. Look for the authoritative version in August 2018.

TENTATIVE ITINERARY (to be confirmed a month prior)

Our program in Nepal will take place in the city of Kathmandu, Chitwan National Park, and a field study site in the mountains of eastern or central Nepal. At present, our candidate site is Manaslu Conservation Area, but this may be revised depending on current local conditions in this area. Here's the provisional itinerary. As with any innovative program in a less-developed part of the world, the schedule and timing has to remain tentative until fairly late. Please be assured that our program will be fascinating, exciting, and valuable regardless of the specific field study locale. We'll share with you a more detailed trekking itinerary once it is finalized.

Date	Activity
9/20	Depart home
9/22-24	Arrive Kathmandu, transfer to lodge. Meet and greet. Welcome comments. Orientation, preparations in Kathmandu. 3 nights.
9/25-28	Drive to Chitwan National Park. Ecology and wildlife surveys. 4 nights
9/29-30	Return to Kathmandu or travel to Pokhara 2-3 nights.
10/1-31	Trekking, ecological field studies in Nepal Himalaya (details TBA). 30-31 nights.
11/1-3	Return to Kathmandu, wrap-up the class. Farewell activities. 3 nights.
11/4	Return home or begin independent travel

VIII. Reading List (Example only. This list will be revised and sent to enrolled students in September, 2018)

1. Jack Ives. 2004. *Himalayan Perceptions.* Routledge Press, Chapter 2.
2. Hinduism: A brief overview. Various sources, compiled by Chris Carpenter.
3. Joel T. Heinan and Suresh K Shrestha. 2006. Evolving Policies for Conservation: An Historical Profile of the Protected Area System of Nepal. *Journal of Environmental Planning and Management* 49 (1): 41 – 58.
4. Sujan Pandit. 2012. *Tourism Development and its impact on the livelihood of the Tharus: a case study of Chitwan National Park, Nepal*. Central Ostrobothnia University of Applied Sciences (Degree Programme in Tourism January 2012). (Ch 3, page 15-30 only).
5. Sanjay Nepal, Arian Spiteri. 2011. Linking Livelihoods and Conservation: an examination of local residents' perceived linkages between conservation and livelihood benefits around Nepal's Chitwan National Park. *Environmental Management*. DOI 10.1007/s00267-011-9631-6.

6. Neil H. Carter, Binoj K. Shrestha, Jhamak B. Karki Narendra, Man Babu Pradhan, and Jianguo Liu. 2012 Coexistence between wildlife and humans at fine spatial scales. *Proceedings of the National Academy of Sciences* 10 (38): 15360–15365.

7. Abishek Harihara, Pranav Chanchani, Rishi Kumar Sharma, Joseph Vattakaven, Sanjay Gubbi, Bivash Pandav, and Barry Noon. 2012. Conflating "co-occurrence" with "coexistence" *Proceedings of the National Academy of Sciences Early Edition*.

8. Kazi Kamrul Islam, Dipesh Joshi and Noriko Sato. 2012. Tiger Conservation in Chitwan National Park Nepal. *International Journal of Environment*, 2(1): 64-72.

9. Jack Ives. 2005. *Himalayan Perceptions.* Routledge Press, Chapter 2.

10. Bing Su, Chunjie Xiao, Ranjan Deka, Mark T. Seielstad, Daoroong Kangwanpong, Junhua Xiao, Daru Lu, Peter Underhill, Luca Cavalli-Sforza, Ranajit Chakraborty, Li Jin. 2000. Y-chromosome haplotypes reveal prehistorical migrations to the Himalayas. *Hum Genet* 107: 582–590.

11. Kelly J. Stoner. 2006. *Pandas: Conclusion, or Confusion*? (unpulished Manuscript).

12. Sunita Pradhan, Gautom K. Saha, Jamal A. Khan. 2001. Ecology of the red panda *Ailurus fulgens* in the Singhalila National Park, Darjeeling, India. *Biological Conservation* 98 (2001) 11-18.

13. Chris Carpenter and Robert Zomer. 1996. Forest Ecology of Makalu Barun National Park. *Mountain Research and Development* 16 (2): 135-148.

14. Naveen K. Mahato, Kamal Kandel, Sunil Shakya. 2011. A long-term community-based monitoring and conservation program for the red panda in eastern Nepal. Tiger Paper 38 (1): 1-10.

15. Brian Williams. 2002. Red Panda in Eastern Nepal - How do they fit into Ecoregional Conservation. Conservation Biology in Asia, Paper #16.

16 Carol Inskipp, em Sagar Baral, Tim Inskipp and Alison Scattersfield. 2012. The State of Nepal's Birds 2010. Journal of Threatened Taxa 5(1): 3473-3503.

17. Müller-Boker, U. and Köllmair, M. 2000. Livelihood strategies and local perceptions of a new nature conservation project in Nepal. *Mountain Research and Development* 20 (4): 324-331.

18. Karma Phuntsho Nakul Chettri Krishna Poli. 2012. *Mainstreaming Community Based Conservation in a Transboundary Mountain Landscape: Lessons from Kangchenjunga*. International Centre for Integrated Mountain Development, Kathmandu, 2012.

19. Pete Parker, Brijesh Thapa. 2012. Natural Resource Dependency and Decentralized Conservation within Kangchenjunga Conservation Area Project, Nepal. *Environmental Management* 49: 435–444.

20. Janak Raj Khatiwada, Mukesh K. Chalise, Randall C. Kyes. 2007. Survey of Snow Leopard (*Uncia uncia*) and Blue Sheep (*Pseudois nayaur*) populations in the Kangchenjunga Conservation Area (KCA), Nepal. Snow Leopard Trust USA, Seattle.

21. Natalie Angier. 2011. A Forbidding Kingdom of Snow Leopards. *New York Times,* January 25, 2011.

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