

Upcoming Events

FES Seminar Lecture Series: Dr. Alain Plante

Climate Change Effects on the Terrestrial Carbon Pool.

12:00-1:00, Wednesday, Oct 12, 2011. Burke Auditorium, Kroon Hall.

Soil organic matter (SOM) is an important component of the global C cycle. Recent research suggests that the stability of SOM may be as important as its quantity in influencing ecosystem function. I will discuss the current state of knowledge on the response of SOM dynamics to changing climate, i.e., temperature sensitivity, and how it is in part a function of SOM stability. SOM stability is not likely a singular property, but its implications in SOM responses to climate change make it important to express in a quantitative manner, perhaps through the use of indices. Our ability to predict SOM responses to climate change will be greatly improved when models adequately incorporate quantitative and measurable expressions of SOM stability, rather than kinetically-derived parameters. This demand is now decades old, but remains a significant challenge to this date. Alain F. Plante, *Earth & Environmental Science, University of Pennsylvania, Philadelphia, PA, USA*

Human Rights and Conservation

5:30pm - 6:30pm, Oct 12, 2011, Sage – Bowers, 205 Prospect Street

The speakers will present a basic introduction to the Conservation and Human Rights Initiative (CIHR) followed by approaches to addressing rights in conservation and examples of how to integrate rights in conservation practice. Opportunity will be available at the end of the presentation to discuss research opportunities. Please contact jaimini.parekh@yale.edu for further information.

The Conservation Initiative on Human Rights (CIHR) is a consortium of international NGOs seeking to improve the practice of conservation by promoting integration of human rights in conservation policy and practice.

(Webinar) The Nuclear Power Endgame in Germany

12:00pm - 1:00pm, Thursday, Oct 13, 2011 Speaker: R. Andreas Kraemer, Ecologic Institute, Berlin

Presented by: The Yale Center for Environmental Law & Policy, World Resources Institute, and Environmental Defense Fund.

REGISTER HERE:

<https://yaleenvirocenter.webex.com/yaleenvirocenter/onstage/g.php?t=a&d=667768507>

The Yale Center for Environmental Law & Policy, in partnership with World Resources Institute and Environmental Defense Fund, invite you to participate in a new webinar series: Climate Change Solutions: Frontline Perspectives from Around the Globe. This exciting webinar series highlights the current state of climate change policy actions through speakers who provide unique insight into the latest policy developments in the world's highest greenhouse gas emitting countries.

In the second event of this series, Mr. R. Andreas Kraemer, Director of Ecologic Institute, Berlin, will present the German perspective through a discussion of Germany's nuclear power phase-out and its implications for climate policy.

Journal Publications

Historical and future coastal changes in Northwest Alaska

Authors: Gorokhovich, Y. and Leiserowitz, A.

Published: 2011, Journal of Coastal Research. In-Press.

Abstract: Kotzebue Sound comprises a large part of the Northwest Arctic Borough (NAB) shoreline. It has a diverse coastal geomorphology. Natural coastal dynamics and global sea-level rise (SLR) are contributing to changes in the erosion and accretion of beaches. Recently published data from the joint project of the University of Colorado (Institute of Arctic and Alpine Research) and National Park Service (Arctic Network Inventory and Monitoring Program) for the first time makes systematic quantitative analysis of coastal changes along the Northwest Alaskan coast possible. This study is based on shoreline indicators derived from 112 aerial photographs, spanning more than 50 years, from 1950 to 2003, processed by research staff at the Institute of Arctic and Alpine Research. The images were used in this study to locate and digitize the shoreline indicators for 1950, 1980, and 2003. Integration of Geographic Information Systems (GIS) with National Oceanic and Atmospheric Administration's Digital Shoreline Analysis System (DSAS) provided quantitative measurements of historical coastal changes. Projections of SLR in the Arctic from climate models and historical erosion data were used to estimate future erosion rates. The results show mean erosion rates of -0.12 to -0.08 m/yr in the region from 1950 to 2003. The northern and southern shorelines showed erosion between 1950 and 1980, but slight accretion/stabilization between 1980 and 2003. These changes possibly correlate with Aleutian low anomaly variations that affected the climate in the area of study. On the basis of the predictions of SLR in the Arctic for 2000–2049 and 2050–2100, mean erosion rates may increase to 0.6–1.65 m/yr. This would translate into an approximately 70–1000-m retreat of the shore, depending on its slope, composition, and geomorphologic type. These results help to assess coastal vulnerability and can contribute to regional planning efforts.

Uncertainties influencing health-based prioritization of ozone abatement strategies

Authors: Digar A, Cohan DS, Bell ML. 2011..

Published: 2011, Environmental Science & Technology, 45(18), p. 7761-7767.

Abstract: The primary goal of air quality management is protection of human health. Therefore, formulation of ground-level ozone mitigation policies could be informed by considering not just attainment of regulatory standards but also how control measures benefit public health. However, evaluation of health impacts is complicated by uncertainties associated with photochemical modeling and epidemiological studies. This study demonstrates methods to characterize uncertainties influencing health-benefits estimation of ozone reduction (averted premature mortalities due to short-term exposure) in the Dallas-Fort Worth (DFW) region. Uncertainty in photochemical modeling and the selection of temporal metric (duration of ozone exposure) for concentration-response relationships can each affect the health-based prioritization of ozone control options. For example, deterministic results (neglecting uncertainties) based on 8-h daily maximum ozone reduction shows DFW anthropogenic NO(x) controls to yield 9.23 times as much benefit per ton as VOC controls. However, the rankings reverse under 5.7% of the cases (including 2.8% cases that exhibit incremental mortalities due to NO(X) control) when uncertainties in the photochemical model are considered. Evaluated ozone exposure on a 24-h rather than an 8-h basis also reverses the rankings.

Distribution of Selected Timber Species of a Central African Rain Forest in Relation to Topography and Soil Heterogeneity: Implications for Forest Management

Authors: Vincent Medjibe, Jefferson S. Hall, Mark S. Ashton & D. J. Harris

Published: 2011, Journal of Sustainable Forestry, 30:5, 343-359

Abstract: Several studies have looked at the relative importance of habitat association of tree species in maintaining tropical tree species diversity at a variety of scales including the importance of edaphic factors. The objective of this study was to test hypotheses on the distribution of important timber species in relation to topographic position and soil chemical parameters. Tree species from a Central African rain forest were selected within a 100-ha plot in southwestern Central Africa Republic. Individuals of *Lovoa trichilioides*, *Nesogordonia papaverifera*, *Pterocarpus soyauxii*, *Terminalia superba* ≥ 10 cm diameter at breast height (dbh) were inventoried then mapped to topography using a survey laser. A torus translation was performed to test for associations between tree species distribution and topographic position as well as soil mineral nutrients for three of the four species. Trees ≥ 30 cm dbh of all three species showed no association with topographic position. However, the distribution of *T. superba* was significantly associated with high concentrations of soil mineral nutrients. Evidence from mineral nutrient levels indicates that extrapolating topography to define habitat and soil type can be very misleading. Because many of Central Africa's most important timber species have distributions linked to edaphic factors, it is clear that soils must be considered equally as much as topographic position for management plans of logging concessions within Central African tropical forests.

Evaluation and Monitoring of a Newly Discovered Population of *Atelopus varius* in Costa Rica (see research spotlight)

Authors: González-Maya, J., Wyatt, S., Schipper, J.

Published: 2011, FrogLog, Vol. 98, pp. 6.

Abstract: The harlequin frog, *Atelopus varius*, is considered as Critically Endangered as result of a severe population decline. There are two known remaining populations, including a recently discovered one in southern Costa Rica with a small number of individuals with potential signs of Chytridiomycosis in some of them. This project aims to establish baseline data on population status (size, structure, and threats), develop a long term monitoring program to ensure persistence, and understand the dynamics of threats facing *Atelopus* and amphibians in general. In addition, we will be adding to our environmental education programs in the area and working with the indigenous community surrounding the population to develop site conservation strategies. The harlequin frog is a flagship species for conservation in Costa Rica and can be used to raise awareness of global amphibian declines. As expected outcomes the project will 1) collect baseline data on the population and determine the presence of chytridiomycosis fungus, 2) establish a long term monitoring and research program, 3) work with the local community to implement conservation measures to ensure habitat conservation and survival of the population, 4) develop and carry out environmental education with the local community and surrounding areas and 5) conduct surveys in neighboring watersheds to determine the area of occupancy of this population and search for other threatened amphibians such as *A. chiriquiensis*. We expect with this project to generate baseline information and provide insights related with the persistence of this population despite its previous disappearance, generating probable hope for some other species' populations in other areas of the Neotropics.

Book and Book Chapter Publications

(Book Chapter) New England Forests: two centuries of a changing landscape.

Author: Conforti, J.A., Ryden, K.C., Irland, L.C., Jarvis, K.A., Potts, D., Gregg, S.M., Lapping, M.B., Richards, D.L., Brown, D., Pillsbury, E., Rawson, M., Cumbler, J.T., Gee, R., Wood, J.S., Frank, M., Lindgren, J.M., Roper, S.C., Birge-Liberman, P., O'Connell, J.C., Krieg, E.J.

Published: 2011, A Landscape History of New England, Blake Harrison (Editor), Richard W. Judd (Editor), John Elder (Afterword); Massachusetts Institute of Technology Press, pp. 53-70.

Chapter Abstract: This essay will note several enduring conditions of the region's forest geography and then speak of four broad themes in the region's landscape history: the geographical basis for the forest; the conditions that led to its retreat prior to 1880 and to its subsequent rebound; changes in forest ownership over time; and changing scientific and public perceptions of these forests. A brief essay spanning two centuries must omit much, but this overview will begin to place forests within the context of a larger history of the New England landscape.

Research Spotlight

Sarah Wyatt, MSc '12 researching *Atelopus varius*, a critically endangered frog species in Costa Rica

Sarah Wyatt (MSc, 2012) has worked with a local foundation, ProCAT, in conservation in Costa Rica for the past 3 years.

“*Atelopus varius* was once fairly common,” Wyatt says, “but was thought to have gone extinct like so many other amphibians affected by chytrid. While working in a private reserve, we found the second known population near a small indigenous community. This population is particularly interesting because it should not be there.”

She explains that this genus has been devastated by chytrid (>85% are Critically Endangered), and species found around that elevation have been the hardest hit.

During the initial waves of chytrid, many dead frogs were reported from the rivers in the area.



ProCAT team together and in the study site. Photo: ProCAT International



Atelopus varius individual from the new population. Photo: Sarah A. Wyatt-ProCAT

“There are important lessons,” says Sarah, “that can be learned from this population that could benefit many species fighting this disease.”