

# Conservation Ecology and Practice

Organismic & Evolutionary Biology 109

David Foster [drfoster@fas.harvard.edu](mailto:drfoster@fas.harvard.edu)

2020 (4 Credits)      Room: MCZ 202      Schedule: Tuesday & Thursday 10:30 – 11:45 a.m.  
Instructor Permissions: Instructor      Enrollment Cap: 30

*The conservation of land and waters has become a major tool in determining the patterns of land use, conserving biodiversity, combating global change, and ensuring that the benefits of nature are secured for society. With a focus on the U.S., a detailed grounding in the northeastern U.S., and reference to European and other international settings, this course will examine the history and changes in conservation rationale and approach, the ecological theory and research that helps guide conservation planning and execution, and the policies, finances, and practice that enable land conservation to be a powerful agent of landscape change. In place of weekend field trips, the class will host regional, national and international experts in diverse aspects of conservation theory and practice—ecology, policy, finance, planning, and economics—from academia and the public and private sectors, to explore the approaches, challenges, successes and future of land conservation.*

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## Course Objective

To provide a sound interdisciplinary background in the history, ecology and practice of land conservation in the United States for undergraduates and graduate students. To prepare students for more specialized courses in a wide range of disciplines, for further research and training (e.g., summer internships, senior theses), for decisions concerning careers and graduate school, and for related applications throughout their lives.

The conservation of the world's lands and water engages individuals from essentially every field and background that one can imagine, from the biological, physical and social sciences to the arts and the humanities and on to all of the fields represented by Harvard's diverse graduate programs and professional schools. Finance, law, biology, planning, design, engineering, religious studies, anthropology, media studies, computer sciences, and communications...the list goes on. Thus, although this course is offered through biology, its content is diverse and structured to offer a grounding in the field and broad perspectives on the diverse community of skills and talents needed for success. By hosting a series of guests from the academic, public and private sectors, the course will also provide an introduction to leading scholars and practitioners in the field, while highlighting a range of academic and professional opportunities and forging potential connections for further exploration.

Over the years, Harvard's offerings in conservation have been highly uneven and inconsistently available. With a growing number of faculty and scholars in the broad field and related disciplines that situation is changing (see [HU Conservation-related Courses 2020-21](#)). *Conservation Ecology and Practice* fits into this array of offerings by providing a broad overview to the history, ecological rationale, challenges, and practice of land conservation. It is my attempt to provide a course that draws from my training and professional and personal experience and addresses critical issues that confront society today and will engage most students for the rest of their lives.

## Topics Covered

- Insights into conservation from earth history, anthropology, and ecology
- Local to global motivations for land conversion

- Origins and innovations of public and private land conservation. US and the UK.
- Policy and legal underpinnings to land conservation
- Conservation planning, large landscape conservation, Regional Conservation Partnerships
- Natural solutions and ecosystem services. Benefits from and responsibility to the earth and all people
- Conservation stewardship for ecosystem resilience and restoration
- Wildland conservation and rewilding
- Conservation finance and economics
- Social responsibilities. Communities, equity, engagement, and environmental and economic justice
- Visions. Half Earth; One Earth; 30 by 30; Wildlands, Woodlands, Farmlands & Communities

## **Outcomes, Perspectives and Knowledge**

Students should emerge from this course with a strong appreciation for the motivations for land conservation, the history of its development and status in the U.S., and the tools and approaches utilized to advance it at local to regional scales. For many students, this background should provide a strong foundation for related coursework and future decisions concerning academic and career paths. For all, it will seek to provide perspectives into the roles of individuals and partnerships in addressing significant challenges to nature and society that will prove valuable for one's entire life.

I look forward to interacting with and exchanging thoughts about the course material, readings, current events, and individual interests with every student and am regularly available through email and Canvas. There are no teaching or faculty assistants supporting this course or the instructor through the semester, so students should feel free to contact me directly throughout the semester to exchange thoughts, ask questions, or arrange a meeting. Please simply recognize that I am one individual with many students and responsibilities and so, if I fail to respond, have patience or try again! Do not worry about bothering me.

I tend to be on campus Tuesdays and Thursdays, at the Harvard Forest on Wednesdays, and either in Cambridge, Martha's Vineyard or northern Vermont the rest of the time, and so can meet in person, by zoom or phone as works for our schedules.

This is my last class in 38 years of teaching at Harvard and I do hope to make the most of it for you and for me.

## **Requirements**

This is a highly interdisciplinary course and requires no prerequisite background or courses. The class and our meetings will be most interesting for all if it engages students from across a wide range of personal backgrounds, undergraduate concentrations and graduate programs. So, be assured that everyone is welcome, so long as you bring true interest and engagement in the subject. That said, don't hesitate to let me know if you have questions or concerns regarding the course or your fit to it.

All of the materials for the course will be available on-line, principally through the course site and at no cost. Reading materials for each class or week will be arranged in a weekly folder or module. *The materials should be read in advance of the assigned class so that all students are well and equally prepared for lectures and discussions. This is important.*

Given that participation in class and discussions comprise a major part of the course experience, students are expected to attend all sessions and will be evaluated, in part, on their regular participation. Please let me know in advance of any challenges in meeting this requirement; the intent of full engagement is to create a better experience for all, so I will work with you to make this work effectively for you and all of us.

The course is supported by four pillars of activity that each student and the instructor will need to engage in fully for success and that will be the basis for student evaluation.

(1) **Foundational reading** on the origins, history and evolution of land conservation in the United States and Britain. We are fortunate to have access, in advance of publication, to the newest volume in conservation—*Nature Pushes Back. Land Conservation in a Changing World*—which is being published by Yale University Press. The author, Wesley Ward, is retired Conservation Director at the Boston-based Trustees of Reservations, the world’s oldest regional land trust and a leader in advancing the practice of conservation, which was founded in 1891 by Charles Eliot, landscape architect and son of Harvard’s president. For over thirty-five years, Ward served as a leading figure in the advancement and development of American land conservation and he brings that history and his unique perspective on the theory, evolution and practice of land conservation on both sides of the Atlantic to this volume. We will often read a chapter of the volume each week (or skim a couple if they have interesting but less direct relevance), with special focus on particular sections, as appropriate and highlighted by the instructor, to provide a broad introduction to the field and grounding to the course. Class lectures will draw partly from this reading and from many primary sources, which will also be made available in advance on our website. Wes is a delightfully engaging person and will join us at the beginning and towards the end of the semester (by zoom or in person depending on his travels and schedule) to discuss the history and future of the field of conservation, as well as your comments, thoughts and critique of the volume.

(2) One regular assignment for the course will be a brief written reflection (1-2 pages) on each week’s reading. These will be due by Sunday (5 pm) for the reading covered in the coming week and can be submitted through Canvas as a Word document for me to read and comment on. Through this regular assignment, I am seeking your genuine thoughts, interests, questions, concerns or confusion about the material and the subjects covered, rather than to check that you actually read or can summarize the content. Last year this exercise yielded truly interesting comments on a weekly basis and generated much interesting correspondence between me and Wes, or other guest speakers, and frequently with many students. I ask for these reflections at the beginning of the week that we discuss the material because these reflections are very useful to me in organizing the classes. They also assist me in getting to know each of you better and to understand the range of background and interests of the class. Once I have read and commented on the array of reflections, the entire set of compiled remarks will be anonymized and shared with Wes for his use in developing the final draft of the volume. Wes will also use your thoughts and suggestions to organize his own discussion session with the class. Sharing your thoughts—in the reflections, questions and conversations in class and through our discussions with Wes – is therefore, an important part of the course.

I used a similar process of student review and critique in a much earlier course—Forest Ecology— in 2002, when John Aber and I were developing [\*Forests in Time. The Environmental Consequences of 1,000 Years of Change in New England\*](#). This book, which was also published by Yale University Press, will serve as one resource in this course. Its content, writing, and figures and illustrations were greatly improved by dozens of pages of student suggestions.

(2) **Topical reading on issues in conservation.** While grounded in the background from the textbook, the weekly lectures, class discussions, and conversations with guests will cover a range of topics dealing with the theory, science and practice of land conservation. Most of these sessions will be informed by a series of classic or current articles drawn from peer-reviewed and professional literature, organizational white papers, and, less frequently, from popular media. These articles should also be read in advance of the assigned date in order to inform class discussions and exercises. Key

background information from articles or websites related to individual guest speakers will be highlighted in the class preceding a guest visit.

- (3) **Guest experts.** Ideally, this course would be taught in conjunction with two or more field trips that would allow us to explore New England and its conservation landscape, and meet in the field and around the common room at the Harvard Forest with professionals from the public and private sectors who would share insights from real-world examples of conservation science, finance, and application that they are leading. As an alternative, we will invite these experts to join our class episodically, in person and by zoom, to share their background and work in discussions that will be illuminated by case studies that they highlight or readings that they have selected. Guests are especially interested in being challenged and engaging in conversations that help to improve and advance their work and the field, and so time for this will be made available and robust participation will be encouraged. Visitors will include [Jonathan Thompson](#) (Landscape ecologist and PI of the Harvard Forest LTER program), [Liz Thompson](#) (Director of Conservation Science, Vermont Land Trust), [Bob Saul](#) (U.S. Forestland Investor), [Emma Ellsworth](#) (Executive Director of Mount Grace Land Conservation Trust), [Jon Leibowitz](#) (Director, Northeast Wilderness Trust), [Chandni Navalkha](#) (Associate Director, International Land Conservation Network), [Bill Labich](#) (Senior Conservationist in Regional Conservation, Highstead Foundation), and [Marianne Jorgensen](#) (Manager, [Academics for Land Protection in New England](#)).
- (4) **Personal investigation and expression.** The course has been developed and structured to enable students to develop a broad background in conservation ecology and practice, to join in a wide range of conversations to explore many of these topics and issues, and to offer each an opportunity to explore specific themes and topics of particular interest in more detail. Reflections on the content and coverage of the text book will be compiled as noted above (1) and will comprise one component of the written expression. A second component will be a mid-term (March 8 in class) and a final exam, which will be an at-home exam that will take roughly the duration of a class period to complete. The final component is a final project on a land conservation topic of your choice that extends on subjects introduced in class. This last assignment is due the final day of classes. All of these are intended to elicit your own interests and expression on the work we cover.

### **[David Foster](#)**

I am an ecologist and senior conservationist at the [Harvard Forest](#), the University's 4000-acre ecological laboratory and classroom in central Massachusetts, where I served as an assistant and associate professor from 1983 to 1990, and then director from 1990 to 2020. Since finishing my PhD thesis on the role of wildfire in shaping the wilderness landscape of Labrador in 1983, I have been on the faculty in Organismic and Evolutionary Biology and have taught courses in forest ecology and paleoecology (OEB), conservation and natural resource policy (Kennedy School of Government), and, for 38 years, a wonderfully enjoyable and collaborative freshman seminar that centered on New England, the research at the Harvard Forest, and topics in global change ecology.

My research is interdisciplinary and draws from my background in ecology, history, religious studies, and geography and explores landscape dynamics resulting from climate change and human and natural disturbance. All of my work seeks to address basic scientific questions but in ways that it can directly help to inform the understanding, conservation and management of natural and cultural landscapes. Much of my focus has centered on New England, but I have enjoyed many comparative and collaborative studies in the boreal landscapes of Labrador, Sweden and Norway and the more temperate and tropical regions of Denmark, Puerto Rico, the Yucatan, and Patagonia.

My interest in conservation was triggered by watching the development of monstrous houses consume my childhood landscape of farms, forests and streams in southern New England, and was catalyzed by four professors—Richard Goodwin and Bill Niering, early leaders in The Nature Conservancy and natural area conservation and study in Connecticut, Bud Heinselman, who conducted definitive research and helped advance federal protection for Minnesota’s Boundary Waters Canoe Area Wilderness, and Herb Wright, who integrated social, physical and biological perspectives in his interpretation of the last 100,000 years of earth history.

My more formal background in conservation comes entirely from professional and personal experience and ongoing research, rather than academic education, and derives principally from four ongoing sources of engagement: (i) participation in organizational leadership (Mount Grace Conservation Land Trust, The Nature Conservancy-Massachusetts, The Trustees of Reservation, Highstead Foundation, Academics for Land Protection in New England, and the Land Protection Fund for Martha’s Vineyard), (ii) research and teaching with faculty, staff and students in FAS, the Graduate School of Design, and the Kennedy School; (iii) development and regional coordination of the Wildlands and Woodlands initiative; and (4) implementation through land purchase and permanent conservation of large portions of the [Harvard Forest](#), family lands in the Northeast Kingdom of Vermont, and the holdings of many landowners and organizations.

Beginning in 2004, I began working with colleagues at the Harvard Forest, more than two dozen colleges and universities, and ultimately more than one hundred organizations and agencies to develop and advance [Wildlands and Woodlands – A Vision for the New England Landscape](#), which lays out an ambitious plan for the protection and conservation of forest and farmland across the region. This effort is advancing through a number of coordinated programs based largely at the [Harvard Forest](#), [Highstead Foundation](#), and [Lincoln Institute of Land Policy](#), the [network of 50 Regional Conservation Partnerships](#), outreach and policy by the [Northeast Forest Network](#), the collaborative efforts of [ALPINE—Academics for Land Protection](#) in New England, and partnership with the [New England Forestry Foundation](#) and [Northeast Wilderness Trust](#). This work involves close collaboration with dozens of land trusts and conservation organizations, state and federal agencies, and groups including [Food Solutions New England](#), which is advancing the related [New England Food Vision](#) and [New England Feeding New England](#).

### **Harvard Forest information on David Foster**

- [Website](#)
- [Harvard Forest Publications](#)
- [Harvard Forest Datasets](#)