The Future of Life on Earth: A Case for Academia's Role in Advancing Conservation and Biodiversity to Address Climate and Human Health

2021 AASHE Conference
October 13, 2021

Presenters:
Dr. David Foster
Dr. Mele Wheaton
Caroline Beckman
Dr. Tom Kelly
Marianne Jorgensen

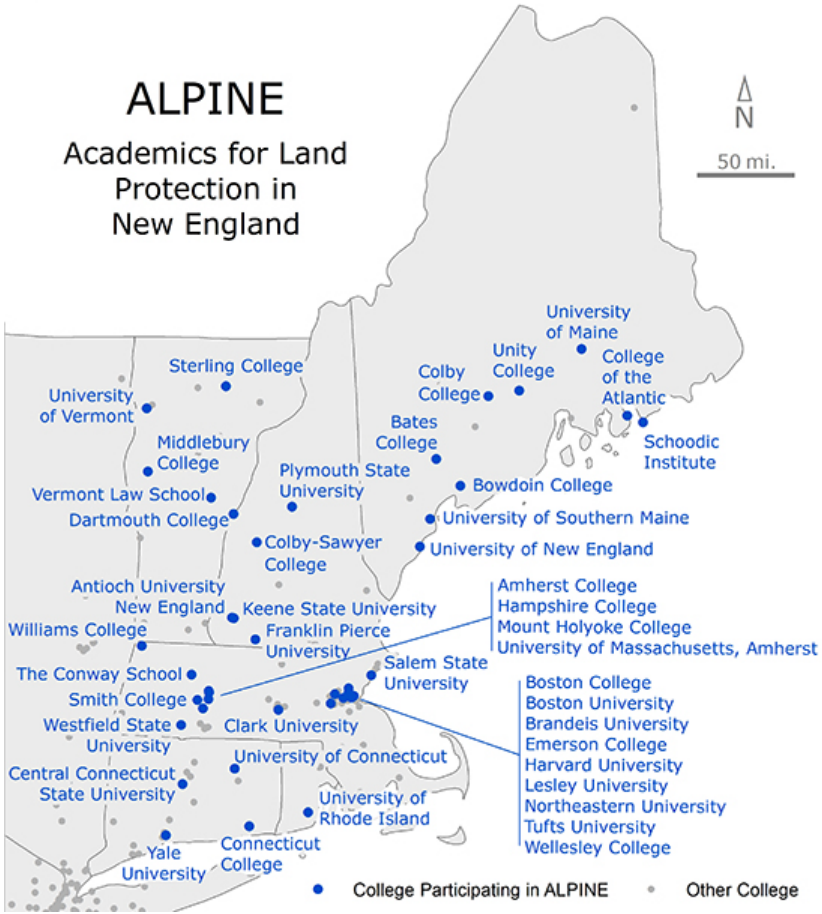
ALPINE

ACADEMICS FOR LAND PROTECTION IN NEW ENGLAND

New England's Academic Impact

- **Undergraduate and graduate institutions 228**
- **Faculty 250,000**
- **Students 1,200,000**
- **Land owned by colleges and universities 130,000**

The organization's mission is to encourage institutions of higher education across New England to become significantly engaged in the conservation of land across the region – and beyond.

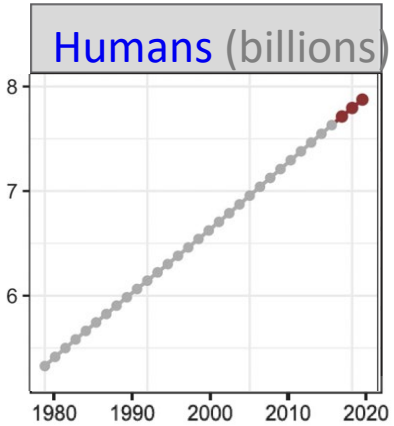


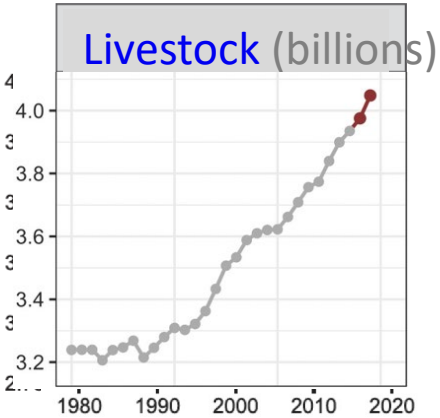
Engaging Academia in Securing the Future of the Earth for Nature and Society

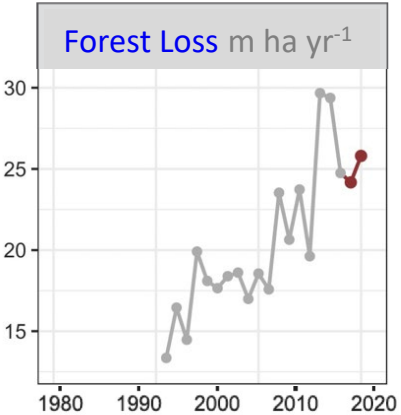
David Foster Harvard Forest, Harvard University Highstead Foundation

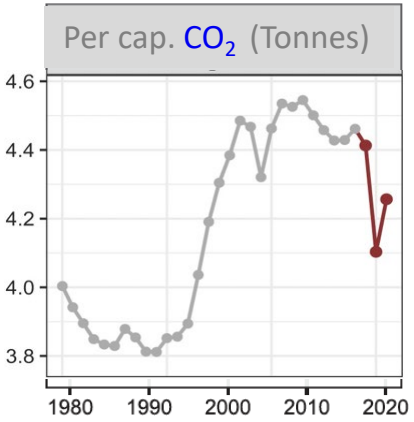
World Scientists' Warning of a Climate Emergency

11,258 SCIENTIST SIGNATORIES FROM 153 COUNTRIES









"US development is expanding at more than 24 million acres annually. …roughly a football field of natural area disappearing every 30 seconds.

Since 1970, North America has lost 29% of its bird population … as many as 3 billion birds have gone missing from the continent's skies."

June 2021

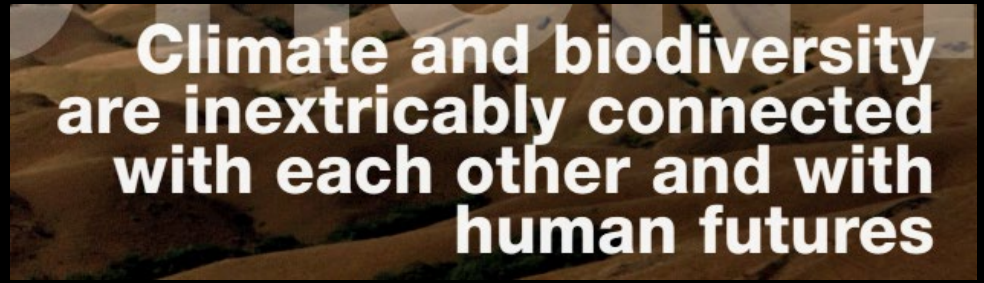
BIODIVERSITY AND CLIMATE CHANGE

Scientific outcome

IPBES

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

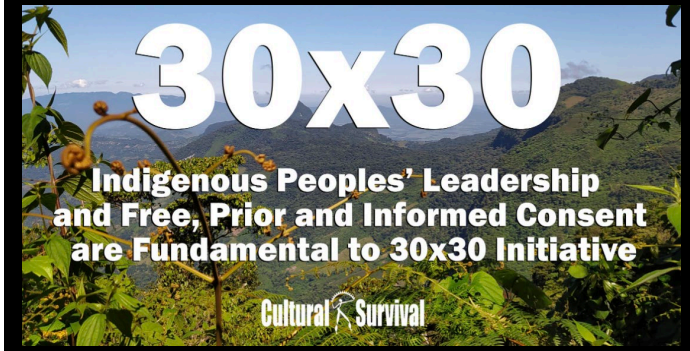
IPCC



Biden's Historic Action on 30x30

January 27, 2021

Presidential executive order puts America on the path to protecting 30 percent of its land and ocean areas by 2030



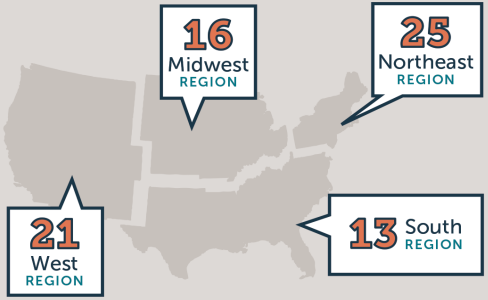
Higher Education Supports a Strong 2030 U.S. Climate Target

APRIL 2021

29 Different States

75 Campuses signed

Across the Country



Diverse Institution Types Including

7	Community Colleges
21	Liberal Arts Colleges and Universities
24	Regional Comprehensive Universities
19	Research Universities
2	Tribal Colleges and Universities
2	Historically Black Colleges and Universities (HBCUs)

Second Nature

CONSERVATION CATALYSTS

The Academy as Nature's Agent

Edited by JAMES N. LEVITT

Part I: Regional Conservation Initiatives

Part II: Biodiversity Conservation at the Landscape Scale

Part III: Sustainable Development and Land Conservation

Part IV: Law, Policy, and Organization

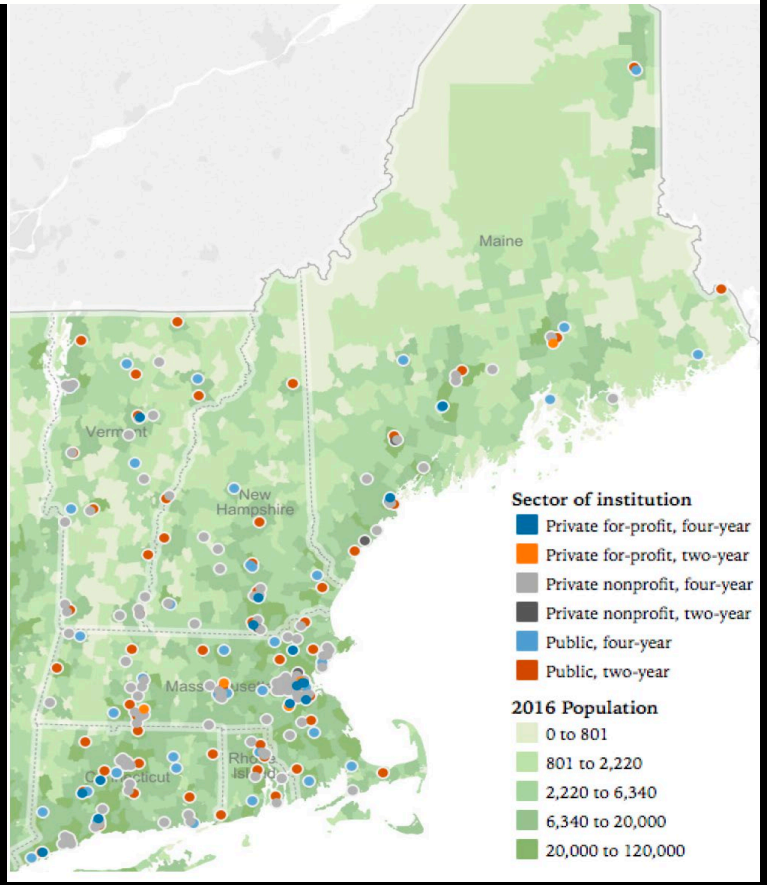
Part V: The Contribution of the Humanities

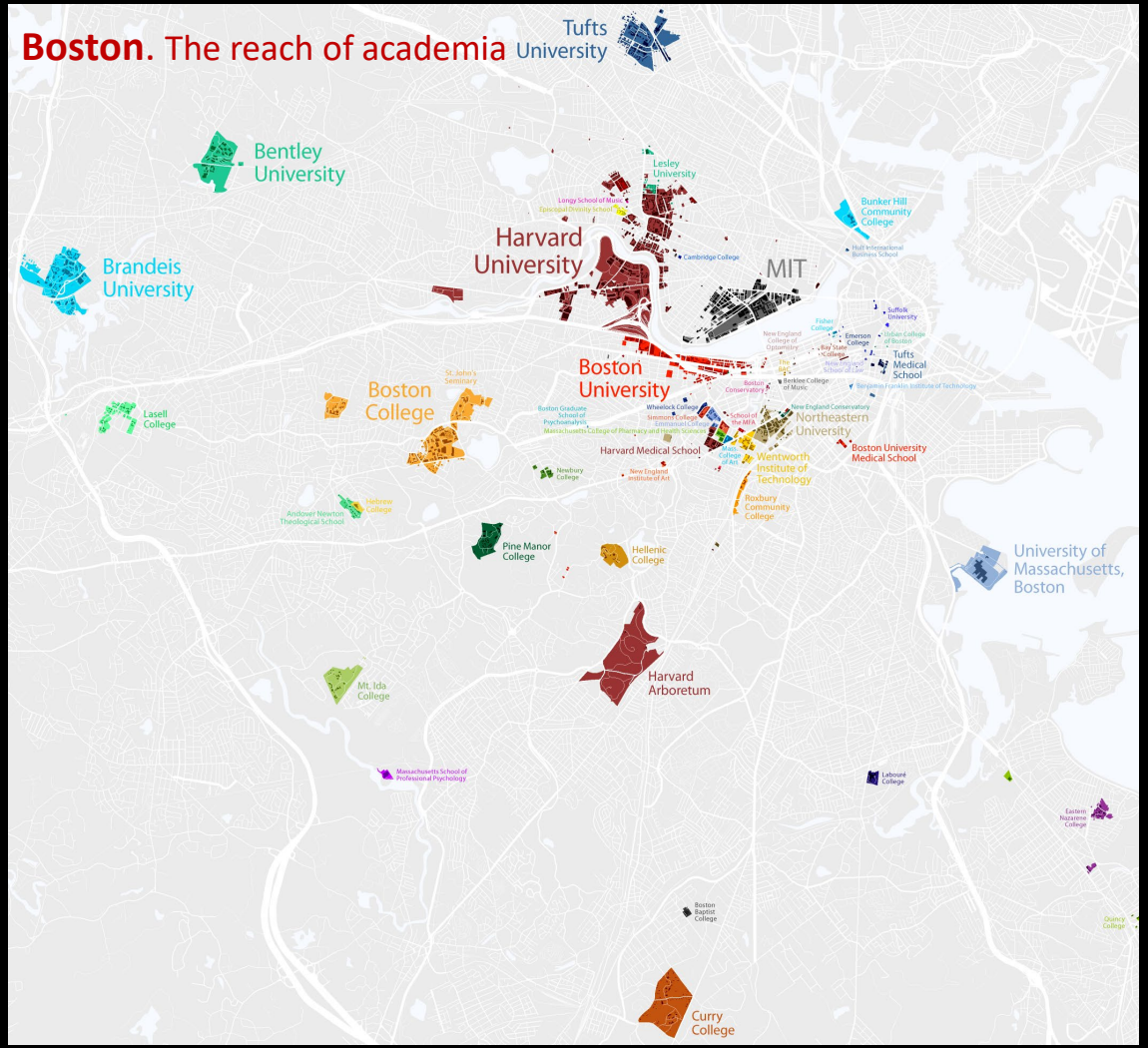
2014

LINCOLN INSTITUTE OF LAND POLICY
CAMBRIDGE, MASSACHUSETTS

ALPINE

ACADEMICS FOR LAND PROTECTION IN NEW ENGLAND





BATES COLLEGE

Bates-Morse Mountain Conservation Area: A Partnership in a Shared Conservation Effort

By Shuyi Lin

COLGATE UNIVERSITY

A University Creates Land Use Tools to Promote Conservation and Archive Carbon Neutrality

By Shuyi Lin

COLLEGE OF THE ATLANTIC

A Small Four-Year School Uses Forests, Farms, and Islands for Student-Led Planning, Research, Food Production, and Study

By Shuyi Lin

CONNECTICUT COLLEGE

A Commitment to Land Conservation From the Compus to Three Large Natural Areas

By Shuyi Lin

An aerial view shows Connecticut College's Arboretum Campus in New London, Connecticut. Credit: Connecticut College

At a glance:

- Campus arboretum
- 750 acres
- Ecological landscaping, botanical collections, natural areas, and research areas

Connecticut College is a private liberal arts college located in the seaport city of New London, Connecticut. Founded in 1911 as a women's college, Connecticut College is now a co-ed, undergraduate institution that hosts approximately 1,865 students and 200 faculty, with 98% of students living on campus.

The campus, including the land surrounding the buildings, is managed as an arboretum encompassing 750 acres that include a variety of plant collections, natural areas, and other managed landscapes (Figure 1). The Arboretum Campus of Connecticut College is not only an academic center but also an important part of land conservation and stewardship. The mission of the arboretum includes teaching, research, conservation, recreation, collections, stewardship of natural resources, and public education. As a college located in a city

ALPINE — ACADEMICS FOR LAND PROTECTION IN NEW ENGLAND — Academic Conservation Briefs

MIDDLEBURY COLLEGE

A Creative Approach to Conservation Leads to the Protection of an Iconic Campus

By Katie Michels, Kevin Fleming, and Isabella Gambill

SMITH COLLEGE

Constructing a Living Building Leads to Land Conservation

By Shuyi Lin

UNIVERSITY OF VERMONT

Conserving Natural Areas and Research Forests

By Rick Paradis, Director Emeritus, University of Vermont Natural Areas

HARVARD FOREST
HARVARD UNIVERSITY

CASE STUDY

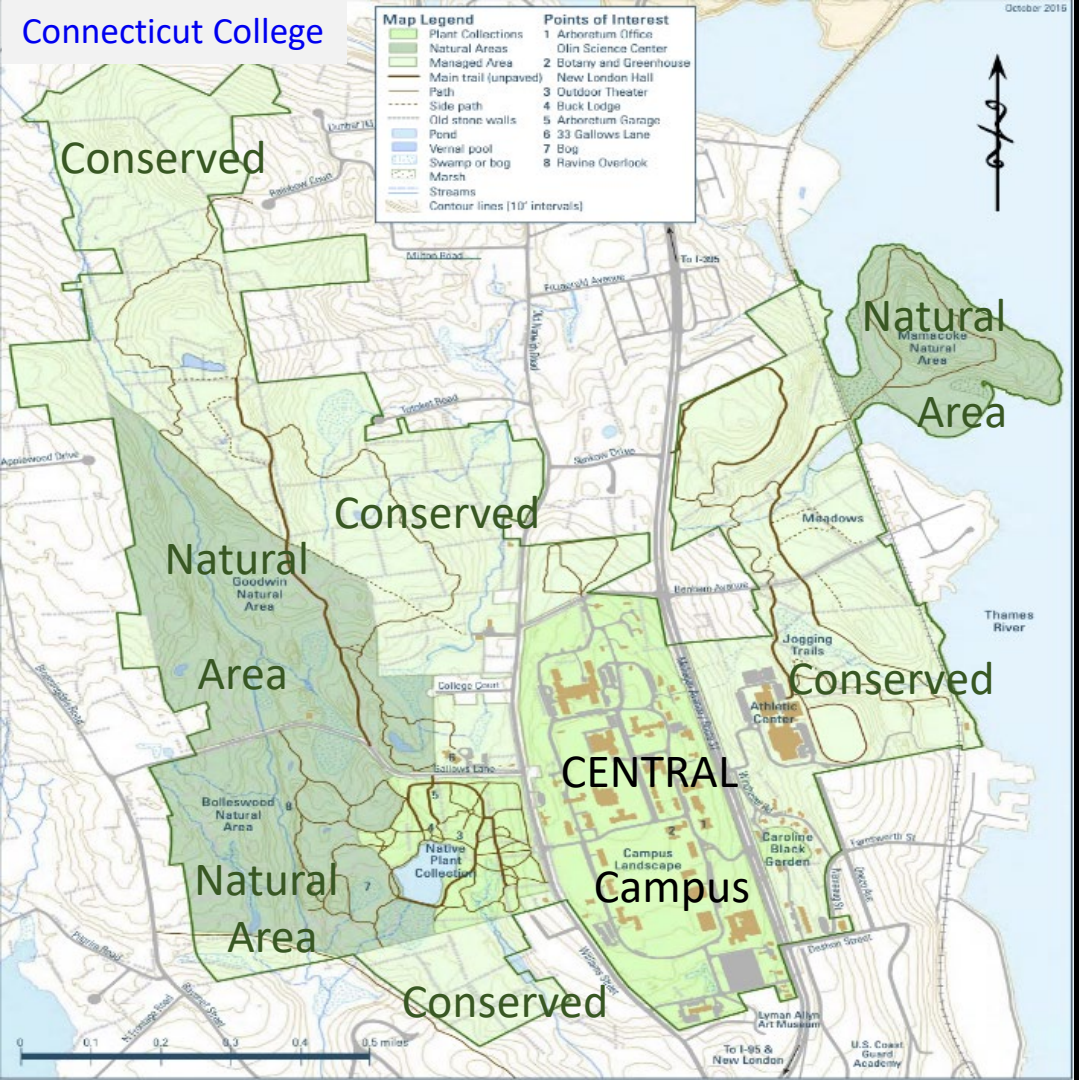
Photo: D. Foster

Harvard is a large and complex university, comprising more than 5,457 acres in holdings ranging from the campuses in Cambridge, Boston, and Allston and an old-growth forest in southern New Hampshire to centers as far flung as Dumbarton Oaks in Virginia, the

By David Foster

The Harvard Forest

Connecticut College



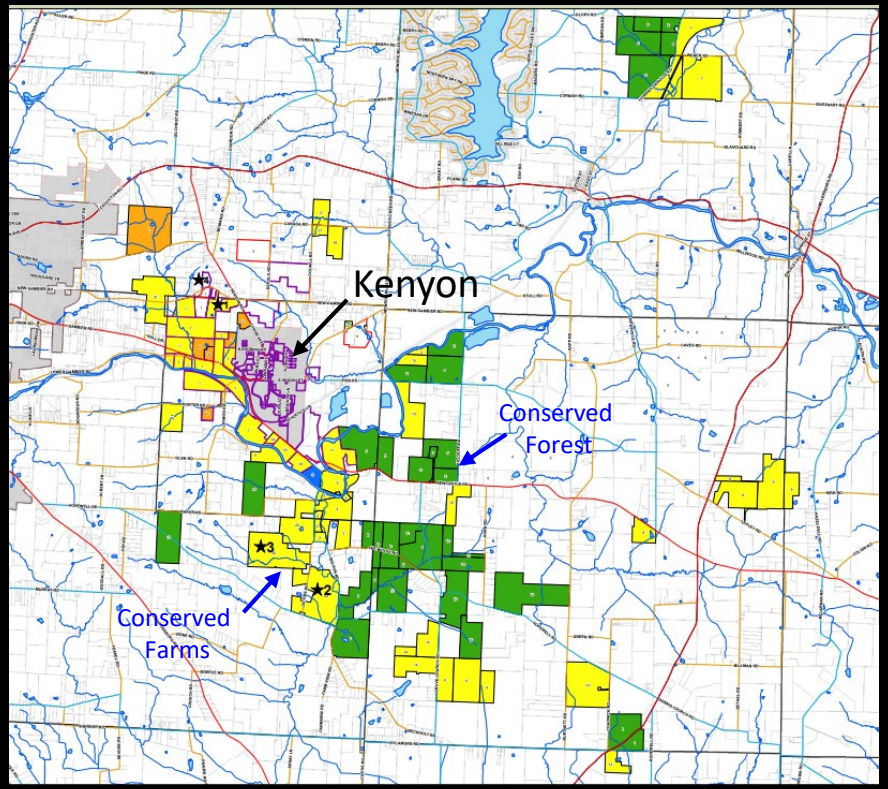
Connecticut College

750 acres -- conserved forest, meadows, gardens

3 natural areas with trails but no management
For science, education, cultural values, solitude

Purchased by faculty, alumni, students, friends and the college working with local land trusts

Conserved 65 farms and 6000 acres in 20 years



Kenyon College -- Mission and Values

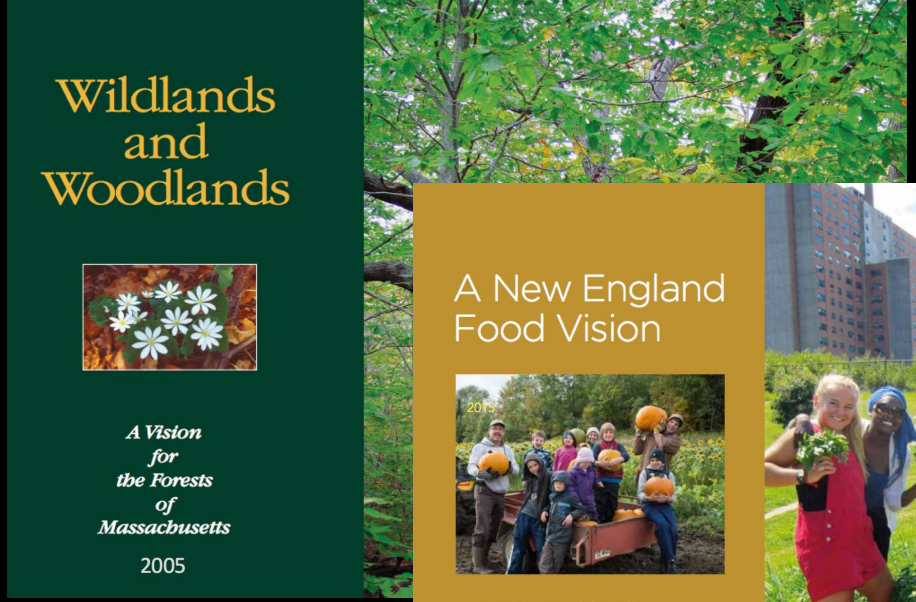
Enduring Connections to People and Place

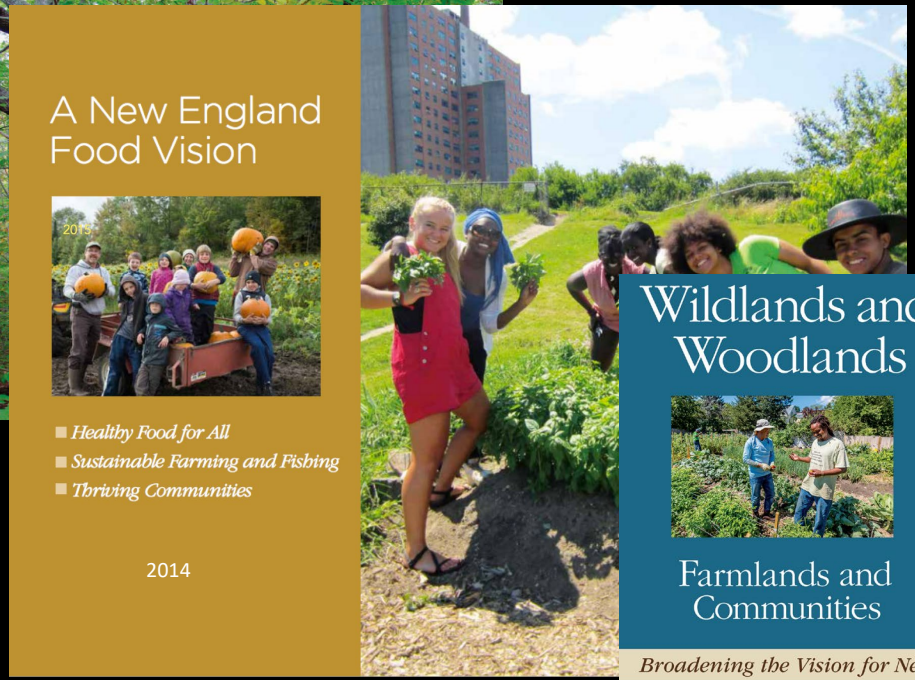
Our natural setting shapes the way we learn and live, and we recognize our vital role in stewarding our environment.

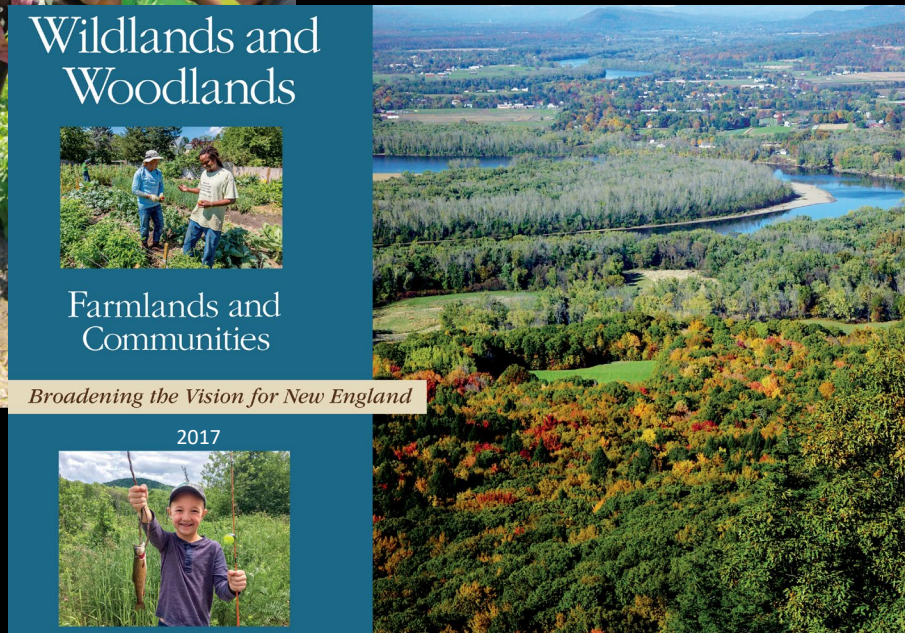
Kenyon College -- Philander Chase Conservancy

Forests, Farms, Fisheries, Food & Communities

Wildlands and Woodlands & Food Solutions New England



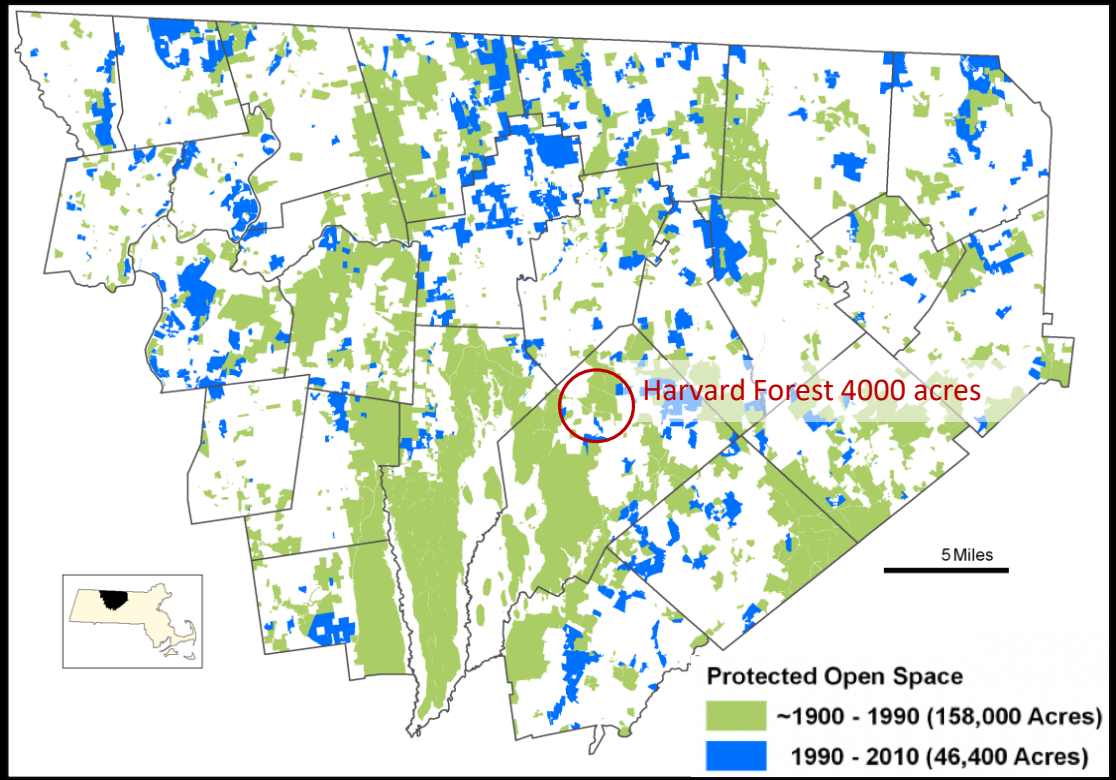




North Quabbin Regional Conservation Partnership

North Central Massachusetts

RCP = Informal collaborative that scale conservation from landowners to regions



Founded in 1997

26 towns
22 active public & private partners

Harvard Forest a founding member

Regional Conservation Partnerships

Network of 51 RCPs advancing Land Protection

>500 Public & Private Partners

NGOs
Academia
Foundations
Municipalities
Planners
State agencies
Federal agencies

Responsible Investment at Harvard Coalition

HARVARD'S DIRECT HOLDINGS

Because Harvard's money matters

JOIN OUR COALITION

DONATE

TIP-OFF & CONTACT INFO

TOWARDS A MORE RESPONSIBLE HARVARD ENDOWMENT.

› OPINION

Agricultural company of the Harvard University that cut down native forest in Chiloé is sentenced to pay $ 4.2 million

07.18.2013

By Javier Sanzana and Eduardo Neira (Association of Forest Engineers for the Native Forest)

BUSINESS 03/03/2016 03:02 pm ET

How Ikea And Harvard Got Tangled In A Corrupt Romanian Land Deal

Ikea bought land from Harvard who bought land from people under investigation for cheating the state.

DANIEL BOJIN, PAUL RADU, HANS STRANDBERG Organized Crime and Corruption Reporting Project

LAND
BIODIVERSITY

2020-2025
UNIVERSITY CLIMATE CHANGE COALITION (UC3)
STRATEGIC PLAN

EQUITY
HUMAN WELL-BEING

UC3
University Climate Change Coalition
a program of
Second Nature

SPHERE OF INFLUENCE: CAMPUS

SPHERE OF INFLUENCE: COMMUNITY

SPHERE OF INFLUENCE: GLOBAL

Goal 1
Leverage university resources to accelerate and promote climate action research, teaching and/or co-curricular activities on campus

Goal 2
Foster and strengthen cross-sector partnerships in community to co-create place-based climate action solutions that reduce GHG emissions and build community resilience

Goal 3
As an international coalition, elevate and amplify research universities' leadership role in accelerating global climate action and transitioning to a more resilient, low-carbon future

Sierra

THE MAGAZINE OF THE SIERRA CLUB

CLIMATE & ENERGY | LANDS & WATERS | ADVENTURE | LIFESTYLE | MAGAZINE | Donate

Cool Schools 2021 Full Ranking

The complete list of Sierra's 2021 Cool Schools participants

The Princeton Review

Grades 6-8 | Grades 9-12 | Graduate | Professional

2021 Guide to Green Colleges | Top 50 Green Colleges | Press Release | Rankings Methodology

Top 50 Green Colleges

‹ Rankings Methodology

‹ Guide to Green Colleges Main Page

SUSTAINABILITY TRACKING, ASSESSMENT & RATING SYSTEM

stars

a program of aashe

PLATINUM ®

Overall Rating	Platinum
Overall Score	86.00
Liaison	Jennifer Andrews
Submission Date	Feb. 27, 2018
Executive Letter	Download

STARS v2.1

University of New Hampshire

OP-10: Biodiversity

Status	Score	Responsible Party
✔	2.00 / 2.00	**Stephen Eisenhaure** Land Use Coordinator COLSA Dean's Office

Reporting Fields | Credit Info

"---" indicates that no data was submitted for this field

Does the institution own or manage land that includes or is adjacent to legally protected areas, internationally recognized areas, priority sites for biodiversity, and/or regions of conservation importance?:

Yes

YALE Climate Connections

by H. TUBA ÖZKAN-HALLER, PH.D.
MAY 28, 2021

To help address the climate problem, universities must rethink the tenure and promotion system

The antiquated institution steers researchers away from work sorely needed by society, says H. Tuba Özkan-Haller of Oregon State University.

Environmental Education Research

Routledge
Taylor & Francis Group

Scientists' warnings and the need to reimagine, recreate, and restore environmental education

Alan Reid, Justin Dillon, Nicole Ardoin & Jo-Anne Ferreira

Connecting Research and Practice: Universities and Land Trusts Collaborating for Solutions

Mele Wheaton and Caroline Beckman

Social Ecology Lab

Woods Institute for the Environment
Stanford University

13 October 2021

Haas Center for Public Service

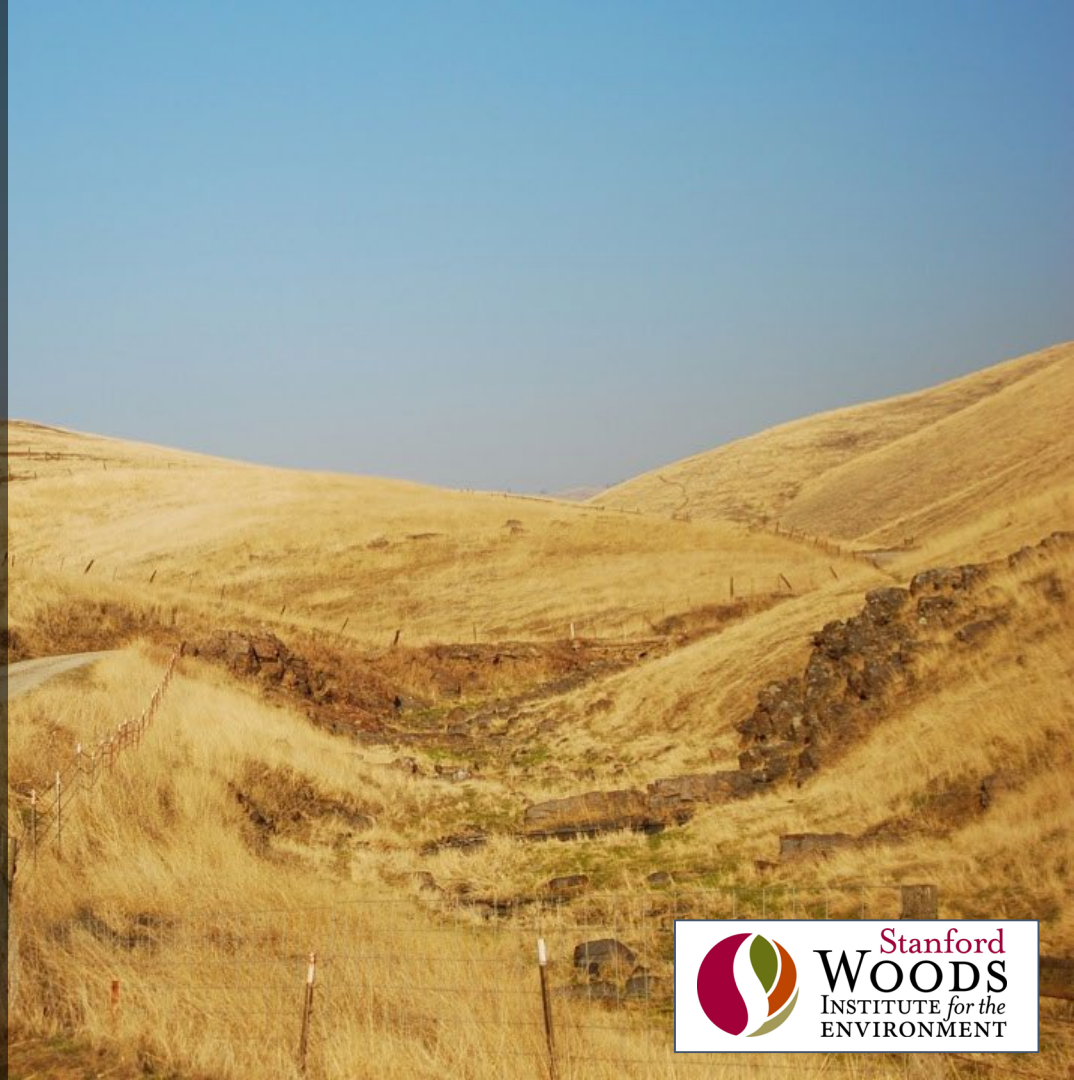
- Hub for Cardinal Service, a campus-wide effort to make service a key part of a Stanford education
- Connects faculty, students, community organizations, and alumni

Stanford | Haas Center for Public Service

Woods Institute for the Environment:

Realizing Environmental Innovation Program

- Interdisciplinary environmental research-and-practice projects
- Solutions orientation
- Implementable by external stakeholders and partners



Stanford WOODS INSTITUTE for the ENVIRONMENT

Research and Practice:

Students and Land Managers Collaborating for Solutions

- Engage students, researchers, and land managers in conservation-focused partnerships
- Provide tools to support the partnerships
- Research the partnerships

Uncommon Dialogue: Local land trusts and interested researchers

Practicum course

Building a Case for Juristac: Environmental Impacts of Sand and Gravel Mining

Amber Roberts

Background

Sargent Ranch is proposing a sand and gravel mine on Juristac, a significant cultural landmark for the Amah Mutsun Tribal Band located 4-miles south of Gilroy, CA. The development's Environmental Impact Report (EIR) will be out in Spring 2018, necessitating preparation for the critical comment period. This project aims to compile impacts from related case studies, as well as the development's 2015 Biotic Assessment, and synthesize them into a check-list of impacts that should be included in the EIR.

Environmental Impacts

Mining can lead to a variety of impacts, including, but not limited to, air pollution, noise pollution, climate change, water contamination, loss of habitat for species, and long-lasting legacy impacts. However, two areas are of special concern within the proposed site:

Changing hydrology of seasonal streams and groundwater

Critical species that live and/or forage in the proposed site

Seasonal Streams and Groundwater

Figure 1: Map of the proposed mine site provided by Hopkins Biological

- Proposal site may affect Uvas/Llagas Watershed and Sargent Creek
  - Runoff may lead to water contamination in streams/drainages
- Ephemeral drainages will be directly altered
  - USACE, RWQCB, and CDFW may have jurisdiction[1]

Assessments of streams/groundwater must include both direct impacts onsite, and indirect impacts offsite. Must include the extent of these impacts.

Biotic Communities

Habitats to be affected:

- California annual grasslands
- Coast live oak forest and woodland

Threatened, endangered, and protected species to be potentially affected:

- Bald Eagles
- Golden Eagles
- California Tiger Salamanders
- California Red-Legged Frogs

Figure 2: California Tiger Salamander

Figure 3: Bald eagle

Assessments of biotic communities necessitate thorough monitoring. Must include the extent of impacts on these communities.

Check-List for EIR

- ❑ Impacts on Sargent Creek and Uvas Llagas Watershed
  - ❑ Surface changes and diversion of water
  - ❑ Pit-depth in relation to water table
  - ❑ Nearby aquifers
  - ❑ Extent of water use and water contamination
- ❑ Evaluating impacts in the context of climate change (drought and/or flooding)
- ❑ Assessment of sensitive biotic communities (with thorough methodology and monitoring)
- ❑ Others?

Acknowledgements:

Thank you to Val and Rob from the Amah Mutsun Land Trust, and Sarah and Becky.

References:

Hopkins, R. & Peterson, P. 2015. "Biotic Evaluation Sargent Ranch Quarry, Santa Clara County, California." *Live Oak Associates, Inc.*

Figure 1: Hopkins, R., et al.. 2015.

Figure 2: http://latimesblogs.latimes.com/unleashed/2010/03/winemakers-businesspeople-at-odds-with-wildlife-officials-over-california-tiger-salamander-protectio.html

Figure 3: http://2oxy-finch.blogspot.com/2014/01/bald-eagle-egg-about-to-hatch.html

What are the characteristics for successful partnerships between universities and land trusts to support conservation?

“

Partnering with academia in a strategic way can **focus research resources on the highest priority questions that address key management uncertainties** - the answers to which can have broad impacts across the landscape.

”

“

Our biggest problem with using science and research to inform land protection and land management decision-making is that scientists and researchers often **do not create practical, on-the-ground guidance that can readily be used to inform decisions and priorities**.

”

New school focused on climate and sustainability

- Advance knowledge critical to sustaining life
- Prepare students as future sustainability leaders
- Engage with local partners to generate and scale local, national, and global solutions

Project Team

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Deborah Gordon, PI
Mele Wheaton
Caroline Beckman
Emily Williams
Fiona Noonan
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Boris Ayupov

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SOCIAL ECOLOGY LAB

All photos by Nicole Ardoin unless otherwise specified

aashe
The Association for the Advancement of Sustainability in Higher Education

GLOBAL CONFERENCE ON SUSTAINABILITY IN HIGHER EDUCATION

Streaming Live: October 12 - 14, 2021

The Future of Life on Earth: A Case for Academia's Role in Advancing Conservation and Biodiversity to Address Climate and Human Health

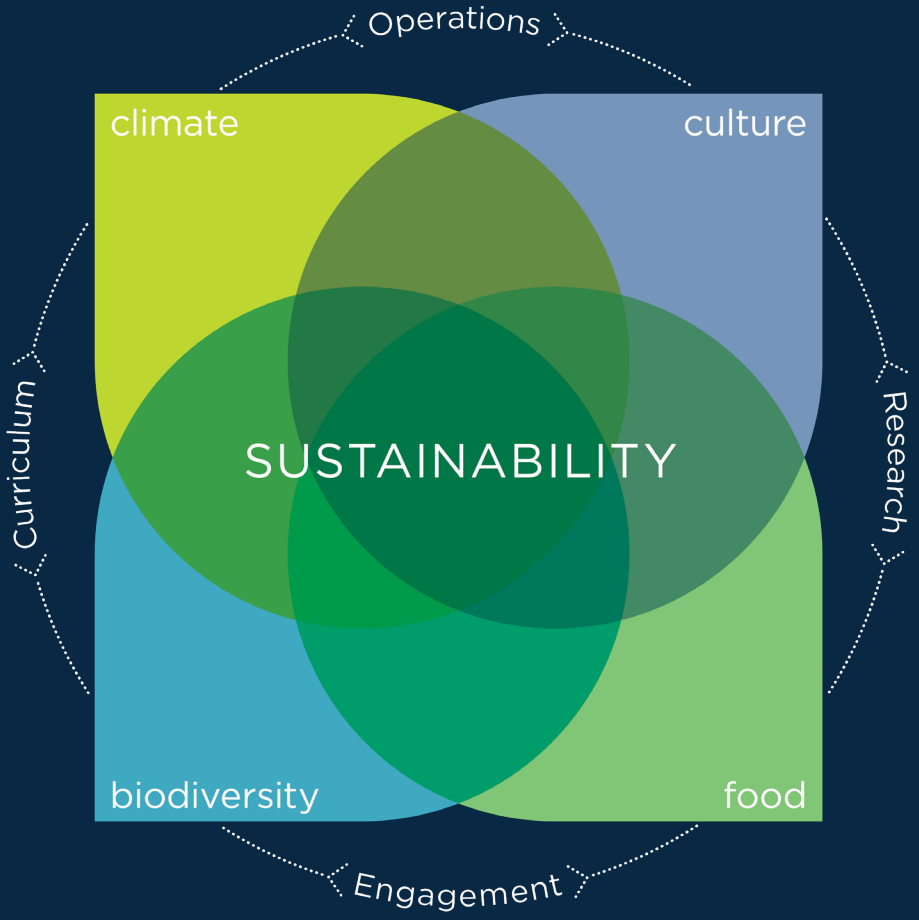
Tom Kelly
Executive Director
Sustainability Institute
University of New Hampshire

UNH Sustainability Institute

Sustainability

Sustainability

Sustainability



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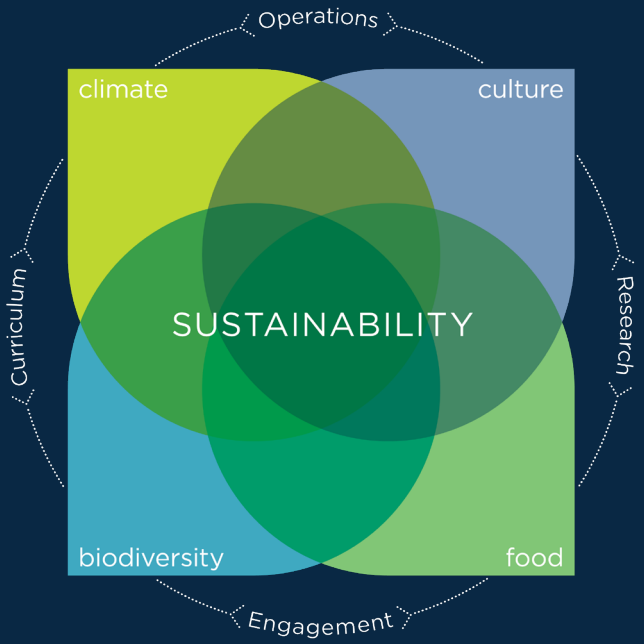

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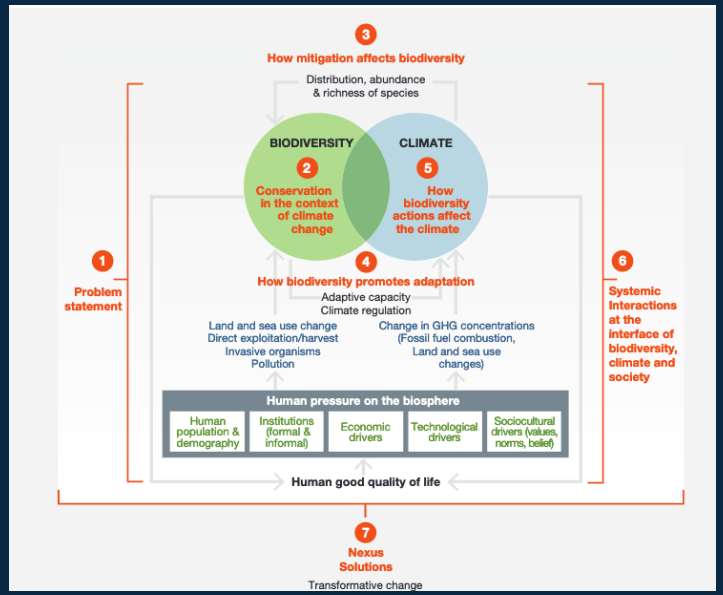
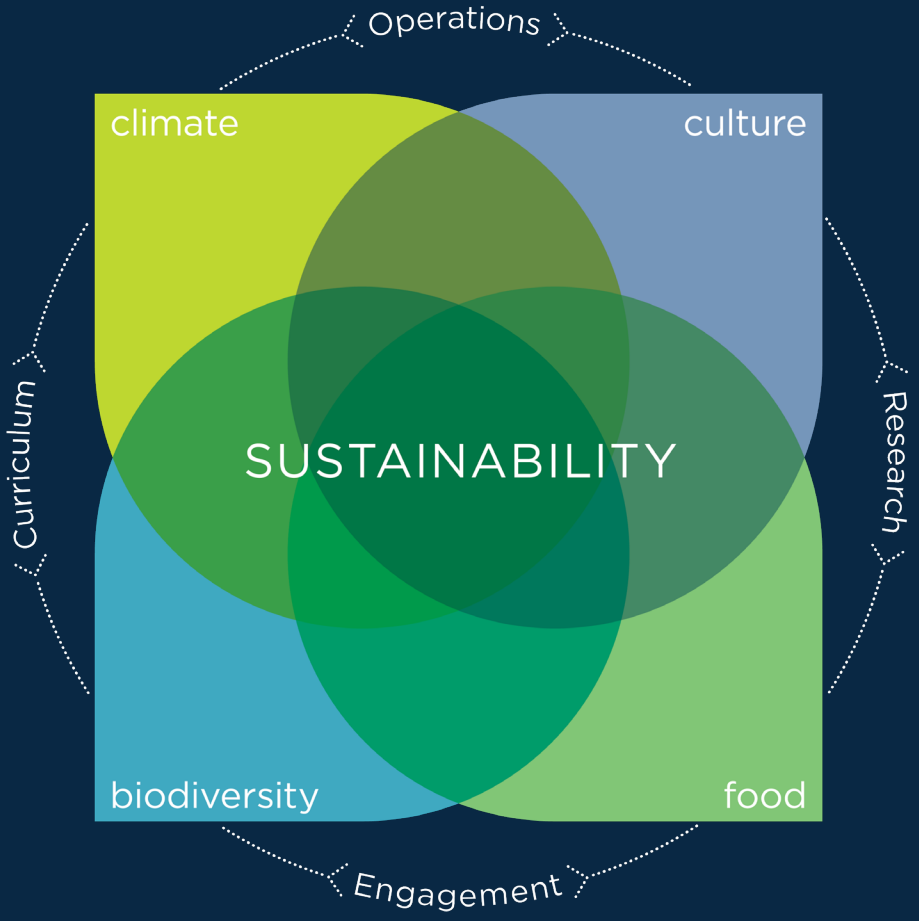


Food and Agriculture Organization of the United Nations
FOOD AND AGRICULTURE
^And fisheries!
1 NO POVERTY
Almost 80% of poor people live in rural areas
2 ZERO HUNGER
We produce food for everyone, yet almost 800 million go hungry
3 GOOD HEALTH AND WELL-BEING
Good health starts with nutrition
4 QUALITY EDUCATION
Nutritious food is critical to learning
5 GENDER EQUALITY
Women produce 1/2 the world's food but have much less access to land
6 CLEAN WATER AND SANITATION
Sustainable agriculture holds potential to address water scarcity
7 AFFORDABLE AND CLEAN ENERGY
Modern food systems are heavily dependent on fossil fuels
8 DECENT WORK AND ECONOMIC GROWTH
Agricultural growth in low-income economies can reduce poverty by half
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Agriculture accounts for 1/4 of GDP in developing countries
10 REDUCED INEQUALITIES
Land reforms can give fairer access to rural land
11 SUSTAINABLE CITIES AND COMMUNITIES
Rural investment can deter unmanageable urbanization
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
1/3 of the food we produce is lost or wasted
13 CLIMATE ACTION
Agriculture is key in responding to climate change
14 LIFE BELOW WATER
Fish gives 3 bn people 20% of daily animal protein
15 LIFE ON LAND
Forests contain over 80% of the world's terrestrial biodiversity
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
Ending hunger can contribute greatly to peace and stability
17 PARTNERSHIPS FOR THE GOALS
Partnerships help raise the voice of the hungry



Adapted from Kelly (2009)

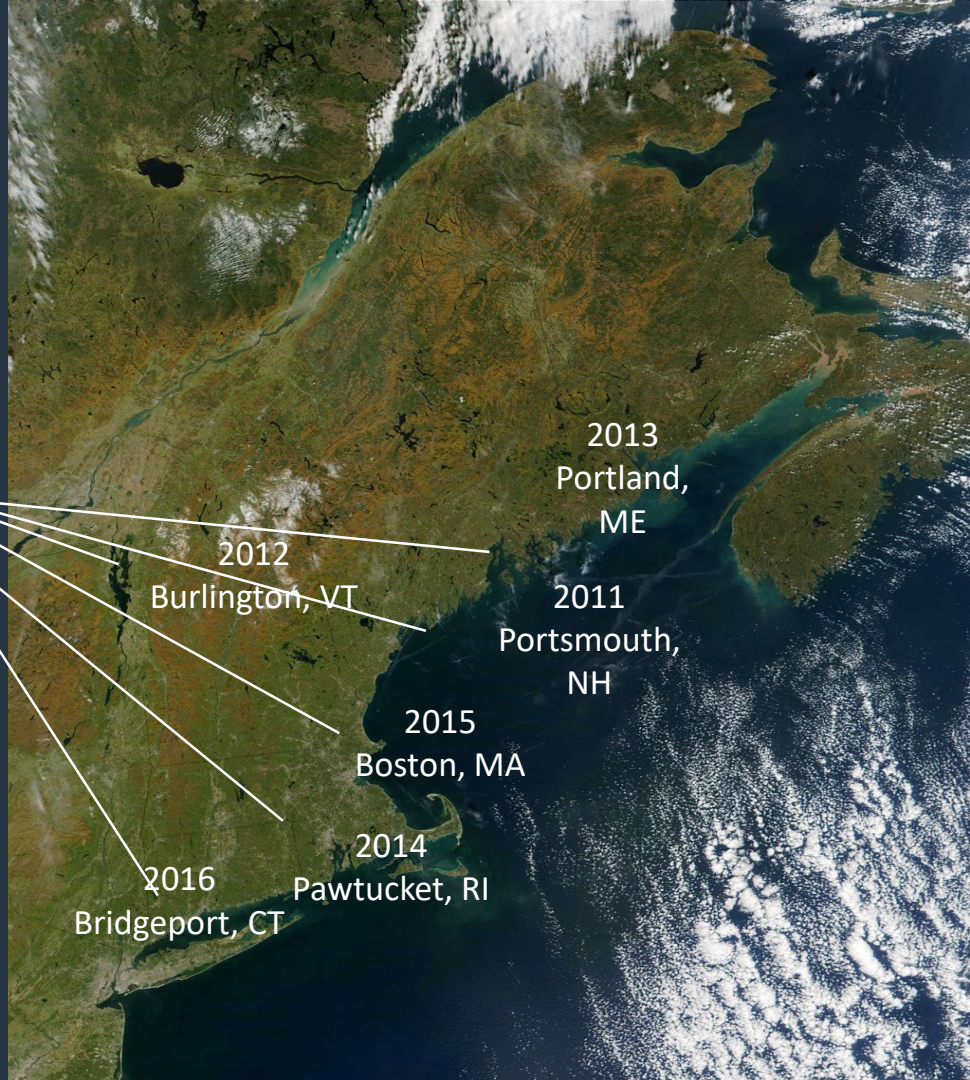
what can we do
better together as a
region than separately
as states and
communities?

A New England Food Vision

- *Healthy Food for All*
- *Sustainable Farming and Fishing*
- *Thriving Communities*

Regional Summits 2011-2017

- 6 regional summits
- ~1000 delegates



FSNE Ambassadors

- Who Participates Matters

Marilyn Moore

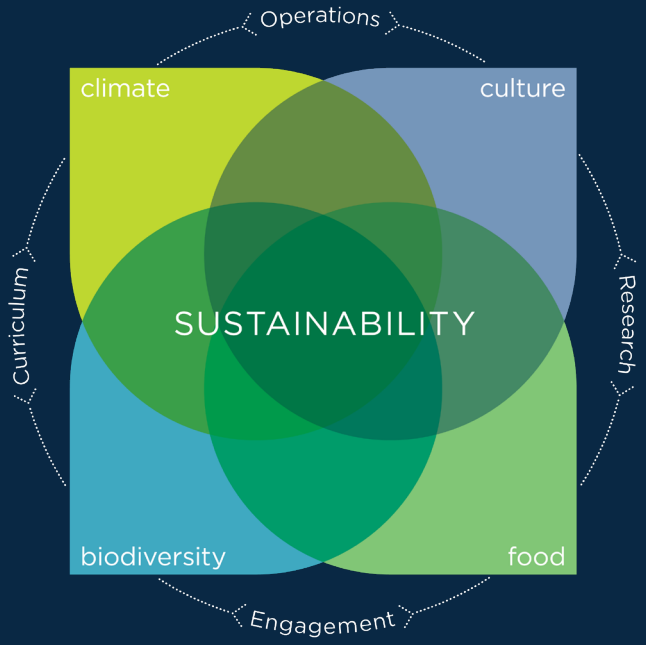
Karen Spiller

Julius Kolawole

food solutions
new england
Network Expansion & Movement Weaving
Equity Leadership Development & Practice
Regional Food Movement Power Aligns & Grows for Transformative Impact
Regional Policy Coordination
Narrative & Communicatons
2020 to 2030 Impact Areas

Aspirational Regional Policy

- Tied to New England Food Vision "Update"
- Landscape-Seascape Integrated Perspective
- Farmland, Forests, Fisheries, and Food
- Democratic Transformation to Sustainability and Resilience



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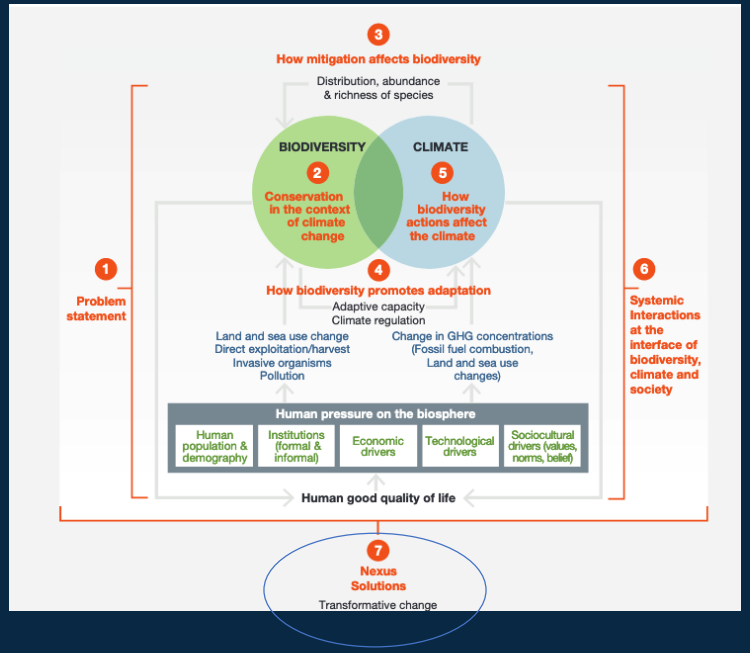

Thank You!

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University of New Hampshire
Sustainability Institute

ALPINE
ACADEMICS FOR LAND PROTECTION IN NEW ENGLAND

Highstead

Stanford WOODS INSTITUTE for the ENVIRONMENT