

MV provides one of the best historical records of land cover and land use change in New England. In particular excellent cartographic resources are available including early explorer accounts, ^{geological studies} coastal and geodetic surveys, state mandated surveys, Commonwealth records + air photo that provide a lengthy and relatively continuous information on the vegetation cover and human disruption of the outwash plain

Start w/ history - overview island veg + land-use history, with specific focus on MCSF and then look at this within the perspective of the paleo record

General History

Edgartown peron settled 1641 3000 Indians

Prop's divisions

bridge making N shore

1683 -

Locus of LV activity - moraine vs outwash

Specific references to Outwash Plain - Forest/woodland cover
 the role of fire quotes
 the bottoms 1830/1848
 Role of pine History of agriculture + ownership

MV ms

Q:

Geographic variation in veg, dynamics, human activity, disturbance processes

How have they affected the distribution + dynamics of veg cover + composition

Conservation angle - scaly, for understanding modern veg + develops long range mgt + conservation plans

One of most densely populated landscapes - what evidence for people, humanized landscapes

Openland communities - what persists, how changed, how dynamic?

Contrast w/ C Mass + inland portions of NE

human dynamics, land cover change, veg recovery from intense LU + its release

Convergence, ↓ diversity, reversion?

Brubaker

Fine-scale geomorph + soils control over
veg patches - how this changes thru time + the
disturbance regime changes; especially cultural
changes as evidence of homogenization/hetero

Landscape-scale questions

distribution of LU, disturbance + vegetation

Integrated system

people, veg, environment, edaphic

Understand mod patterns + process need to understand
interrelationships

Island-bounded so identifiable influences

has history
w/ Outside.

Coastal islands + landscapes tracked as one
w/ no variation; ~ Westhof
histories, etc.

W moraine more rapid to recover - mesic, more nutrients
Gasheed + Choppy - poor soils so → brush + PP, slow

- How different are the islands & areas? Through time
• more or less different today than 19th C than 17th?
• problem w/ pollen representation

- How do geography, edaphic factors esp. soils, and history interact to control spp, vegetation patterns + conservation issues?

Isolation - different extent + time; Block 10k, MV + N-5k, LI vs CC;

Substrate - Size, amount of different substrates - e.g. Block w/ no outwash

History - Fire - e.g. MV vs Nan or BI w/in MV variation

Intensity of Human Use - Nan, BI, MV, CC + LI

Ownership - Eliz Is. vs CC

To what extent do we use history + how?
In defining conservation issues + objectives
In understanding communities

Do we manage for cultural landscapes

Natural easier

Spp + other habitat lost locally + nationally; inherent value in cultural

How do we put this into large regional framework?

Dana McDonald

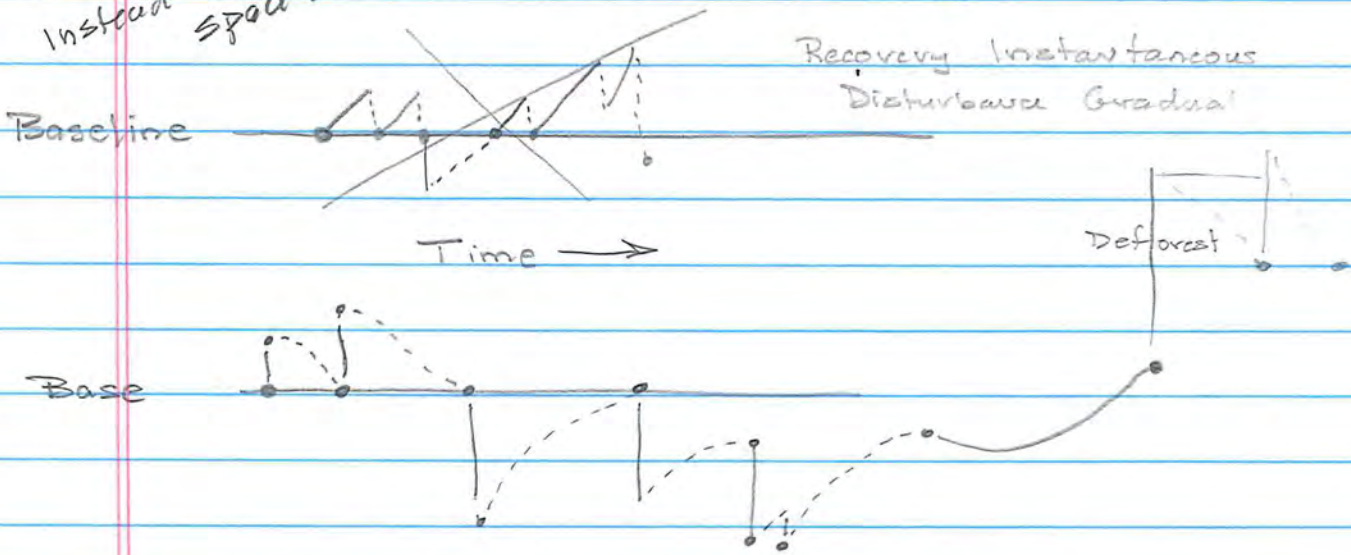


Cultural vs suburban vs semi-natural

Instead of baseline - multivariate space?

Concept

Figs



Recovery Instantaneous
Disturbance Gradual

Outside pulse deflects almost instantaneously
Recovery proceeds w/ decreasing pace, back to almost original conditions

Changing environment can shift baseline

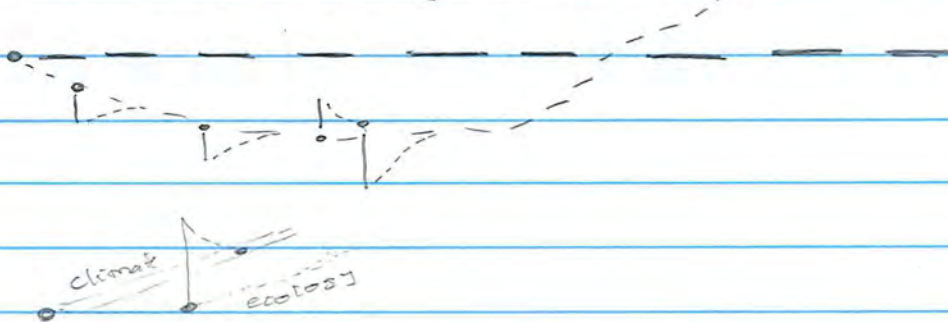
Disturbance can move system to new baseline

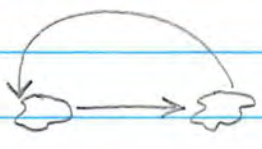
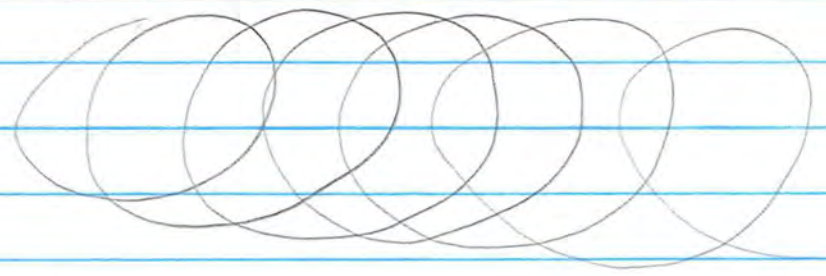
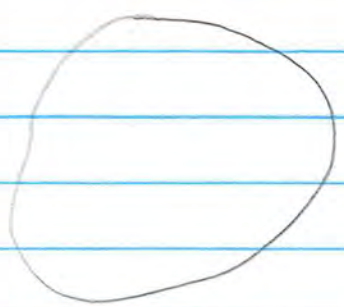
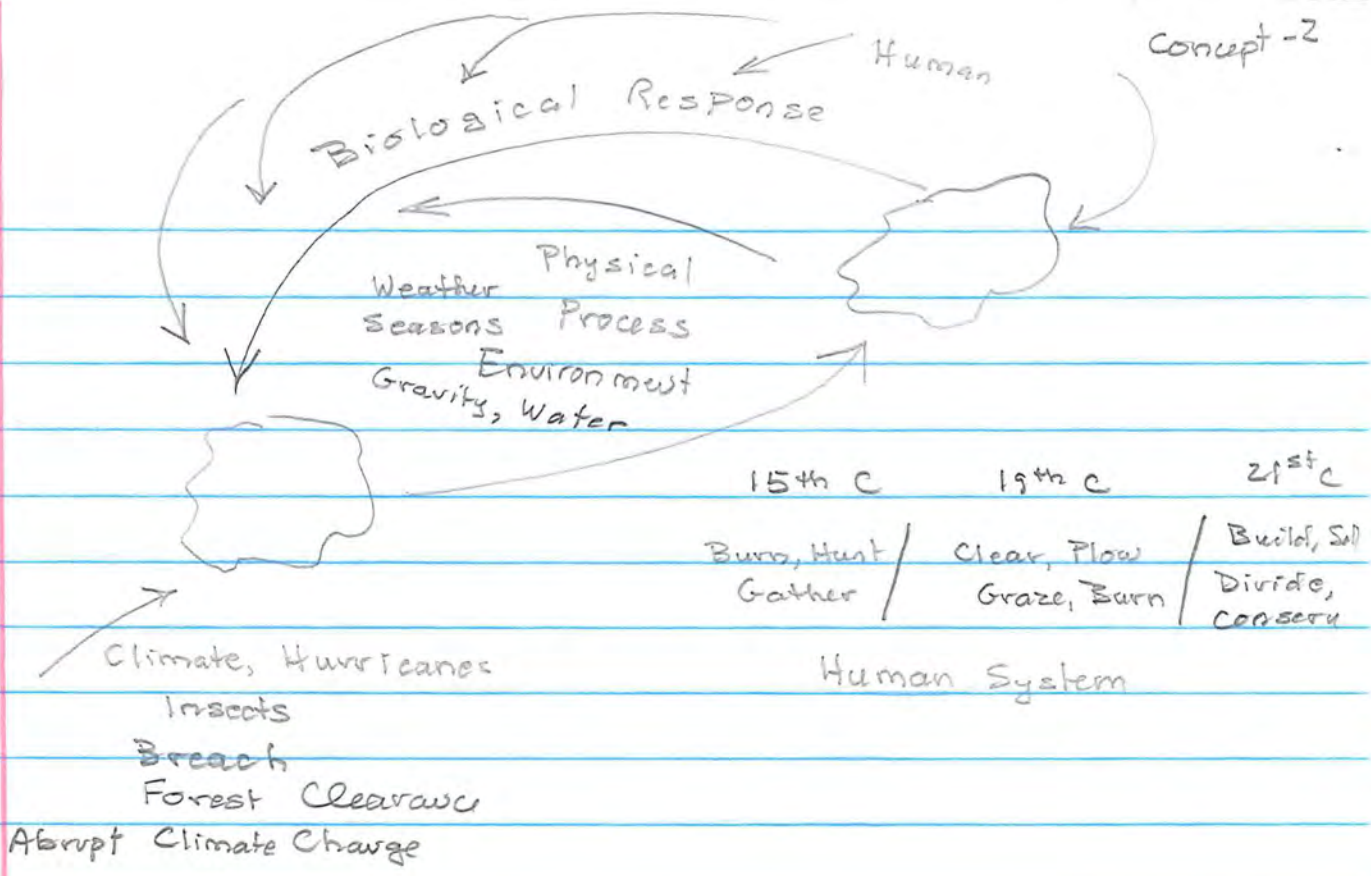
Baseline drifts
Baseline wanders over time as climate changes, soils leach and mature

Basic trajectory of recovery altered by: removal/addition of species; changed environment; (including new culture)

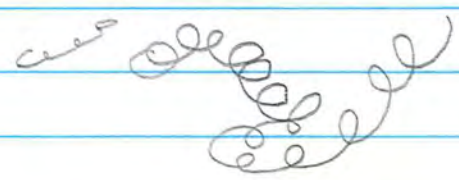
Material all typed

Climate Change x Disturbance





Curve-trajectory
Slinky - Moving, never back to original spot



Climate

Intro + Big
Thinking - Keep
MV connection

Take Home

Glaciers - shaped land - legacy + template

Sea - modified its extent. Once easy connections + movement, now more challenged - what missing, what declined due to th

Indians + practices, Colonials + practices - what legacies? what necessary, process has declined - fire, sheep grazing, cutting

What processes are we initiating, what legacies are we generating

N plume or other GW dynamic - slow, enduring

Development + fragmentation - pop'n response slow, progressive impacts not noticeable

Osprey - DDT + poses/nests - from zero to hundred + slow recovery

Nature - hurricanes, pond barrier bar breach

More difficult - what we don't do. Don't cut down forest, don't develop - scenarios

Do restore connections

OG forests = missing structures + processes

B+W Witness tree maps - SNE

LYB

Woman walking - skull; history embedded in landscape

MV - all basic forces - fire, wind, water, man, tectonic
plague, extinction, introductions

MV



Opening - Info

Unusual Nature of SNE-LI Coast

N - Rocky - Labrador to N MA - Rocky,

Glacially inundated + wave washed, shallow
to no fills, so washed away

S - No glaciation - coastal plain, barrier +
coastal features, gentle plain inland
thru barrier features

W Coast - No mounds - Mts to coast
Rocky shore

We take them for gravel - grow up with
commonplace - even on to Cape Cod + LI
extension of mainland

But unique, transient - While Mts represent
ME coast - slight variation with
sea level

Young, impermanent

The one place where mounds intrude
the coast, one place where
mounds appear in NE

Need to go to Midwest for moraines
other obvious features other than
drumlins, eskers

One of 1st place visited - Gosnold, John
Smith - but earlier - Verr

Not 1st + not focus - S + N - richest
passage ~~to~~ to N around Terra Nova

Bump passed by - infringes potential
passage way thru, riches, ore,
native riches Not done at all

Commons - Champ, Verr, Gosn, Smith
Hudson

Part of coastal plain but distinct - topog
material, configuration

Within that each distinct

BI - Dominated by Pond, Moraine

ACK - low, small

B w/ Moraine + outwash - LI, CC, MV

Naushon - moraine

Native History - early insights, continuous presence, unusual diversified resource base so similar straw w/ variants - of coastal subsistence

Sources for colonial - diversified resource base

10 yrs ago Mella Furdy

Study entire coastline - unified by history, vegetation, conservation

- Ages coordinated approach
 - Examine legacies
 - Address cultural landscapes - quant.
- Approaches from inland to coast - generalist

Acron people who believed - JGT, Tom Callahan
Bill Robertson

Generalist

Approach

Ecological

Conceptual Model

Tree in Great Plain

- study - understand its growth - physiology; light, T°, moisture
leaf fall, rooting, response to moth

has history

tree cells - evolution

tree form - millennial history - vs single stem, spready, cord wood,
ripped out, cut + mowed
dead by moth

sand plain - geology

exposure

Slinky

~~Bibliography~~

~~Quotes~~

At the end - ultimately once we gather historical +
arch data the proof comes from looking at the
evidence in the land itself -

Other processes - distribution

Record of fire

Record of veg + climate

What evidence do these show?

Morton "this custom hath been continued from the beginning"

Paleo

Outline


Hurricanes + Nor'Easters other?

Coastal Processes + Ponds

Vegetation Dynamics

LT, Post-sett

Disturbance - Climate + Insects, Fire



Labrador – fundamental example – LT shifts, Eskimo/Indian
Caribou/climate/fire

Wilderness – untrammled, fire unchecked, interior uninhabited.

Martha's Vineyard practical - \$64 million properties; stitch together compelling history – sell
vision, inform management, engage landowners.



Remarkable diversity

Among islands and within this island

Over remarkably short differences; geological boundary; Naushon, LU – oldest (??)

Spec old forestry and many beautiful (??) landscapes the Tarpaulin Cove and Hadley Harbor.

But where – BI – all moraine – no trees

Ack – (??) elevation and (??), little forest, one town

Cape and LI – extraordinary variable and another book as great contacts

Martha's Vineyard – perfect – contained moderate size might get to know a bit of it.

Moraines – contrasting and dominate the land, supported richer forests, diversity of ponds, 400' relief; immense plain, bold (??) to the coast; afford large population and diversity of cultural activity.

Evidence in towns – remarkable and distinctive variation.

Vineyard Haven – village of Tisbury – Ferry, etc.

Vegetation and habitats – grasslands; forestry; oak and pine

Simple but varied, diverse, spp, endemics

Having identified the coastal region as the study, Martha's Vineyard as study site people enter picture. Science and ecology is all about people – not just people in nature and altering it but working with and around people to get to nature – landowners, NGOs, etc. Other scientists.

Coast – many scientists had focused on individual islands, landmasses, only one had done/begun what we proposed – look across islands and through time. PD. In fact I had worked to help core ACK. Decision to leave to Seattle. Graciously passed on the coast. Given contacts and some requests – all positive and helpful.



Book about Martha's Vineyard but larger. Exploration of ecology and conservation and therefore also history.

Introduction – Why Martha's Vineyard as a perfect lab and how we got here?

If we wanted to create a laboratory for exploration of natural and human process to explore nature's patterns the challenges to understand these and then to apply them both in understating present and anticipating future, assisting with conservation priorities and management.

The grail of ecology is to understand nature's patterns as shaped by natural process and human activity to put together the certain frame of activities over the ages to understand the present and then anticipate where it's going (??) only half – combine with understanding of what to conserve – what does that mean? Understand the objective of conservation – keep some mixture of natural and cultural to protect the land from processes that disrupt process and continuity and understand what human practice can.

Harvard Forest, as an intuition, convinced that need to invoke history. Lots of history – real (??) (??). Worked on this with Glenn Motzkin – world's greatest naturalist – birds, plants, geology, but like me eclectic background not grounded in science. Shape of trees, geology, soils.

So looking for landscape – explored this Labrador, Sweden, Puerto Rico, Yucatan, NVT, Harvard Forest area.

New England – years of study, fascinating patterns and history human history viewed as largely positive cultural attributes worth saving. No Indians, geology controlled broad valleys, hill tops, narrow valleys, and intriguing large sand plains.

Looking for an ideal laboratory with high visibility, high stakes and great values. So where would you go to find a perfect laboratory to explore these issues – combine important conservation landscape, diversity of features, and of human activity? Only one answer – the coast. Huge advantages and opportunities, array of islands and capes, contrasts but constancy.

Physical - islands. Southern and eastern sides, vastly contrasting – one ocean, other calm by range of processes – hurricanes, Nor'easters, fire, coastal processes; gradients – island versus coast – internal; – forces on island.

Repeated (??) – shaped by similar forces working in different combinations – glacial, geology – moraine versus outwash.

Long Island versus Cape versus BJ versus Ack, etc.

Cultural – ideal – resources – Indian – largest populations. Place where expect to perhaps have strongest influence. Moderate climate – resource – land oak – mast and (??), wetlands, shores, (??) and (??) – diversity of resources – marsh, bay, ocean.

Glacial geology – Lamberts Cove – USGS maps.

Early contact – memorable accounts and (???). Lengthy interactions and continuity.

Mashantucket Pequot, Wampanoag.

Cronon

Early and lengthy interactions – dramatic shift captured so well by Cronon.

Colonists – extenuated diversity of land use

Sea resources, land resources

Combined with physical

Sheltered harbor, fertile ground, (??) less.



Objectives

Why Martha's Vineyard

Organization Introduction; setting; landscape interpretation; three periods: relevance to each period ecological insight, conservation implication; future vision; emergent lessons; ecology; conservation guiding principle.

1500 Time-Scales of Drivers and Change

- | | |
|---------------------------------------|--|
| 1. 15,000 – present | Physical - climate, geology, sea level |
| 2. 15,000 – present (1950) | Cultural – extensive/subsistent/local resource |
| 3. 1950 – present | Disconnected and intensive |
| 4. Present – 2050 | Conservation; landscape demise? |

Landscape Interpretation Questions

1. What was glacial history?
2. What was 19th C land use and landscape?
3. What is current conservation status? Who owns it? Can I get there?

✓
Science and history change – both as knowledge base changes, technology and information improve, and as attitudes, opinions, social context change.

History and aesthetics – strong motivators.

Lengthy history – dominated by biophysical prolonged phase of extensive domination by human recovery and wild to give a mixture of cultural and natural. As this occurs – shredded by new wave of human. Permanent, driven ironically by love of human and natural.

Modern conservation – accommodates growth and humans – sustains nature and work with history.

Could use any landscape to illustrate these points.

Yellowstone where geology, fire predominate.

Yucatan where ancient people shaped the land.

Martha's Vineyard – special case of New England and eastern U.S. Transformed landscape. Simultaneously wilder as shredded by new human activity.

Use to illustrate these points and this approach.

Use this approach to understand and attempt to inform the conservation of a very special place.

Esp. appropriate.

Physical template so clearly tied to history and one easily grasped and understood. Wide range of other processes. Cultural processes long-standing, intense in relative terms (e.g. Indians – most focused on coast; colonial – agrarian and maritime intense; development intense).

Biological response diverse but striking and understandable.

Biodiversity – quintessential like – landforms, history and people.

Introduction

Objectives: Visually engaging with intellectually challenging rigorous science with general readership. Balance specific and general.

1. Concise engaging exploration of the ecological history of Martha's Vineyard to explain its current character and conservation status and to identify important directions for its future development. Utilize wide range of existing and new data presented in a new fashion and with scientific and (???) (???) to make it (???) (???).
2. Interpret landscape
3. Use Martha's Vineyard as an extraordinary resource for illuminating some fundamental lessons and insights in ecology and approaches to landscape conservation.
 - ecology is inherently a historical science in which activities of nature and humans are intertwined, collectively determining current conditions and strongly condition the future dynamics and options for management and conservation. Modern contingent on the past. Past embedded in the present and future – template and process.
 - biophysical template and (???) nature and human shape: interact and read despite inherent dynamic of nature: change is not constant.
 - natural dynamics relentlessly slow only occasionally interspersed.
 - despite our appropriate focus on climate change and future environmental conditions, the major drivers of change in landscapes and major concerns for managers/conversationalist – need by inertia and monetary and direct land use. Land use single greatest threat; inherent motion and trajectory; without us huge change. People and nature operate on historically conditioned land.

Martha's Vineyard Concept

Instead of baseline – multivariate space?

Recovery instantaneous, disturbance gradual

Outside pulse deflects almost instantaneously. Recovery proceeds with decreasing pace, back to almost original conditions.

Changing environment can shift baseline.

Disturbance can move system to new baseline.

Baseline drifts/wanders over time as climate changes, soils leach and mature.

Basic trajectory of recovery altered by: removal/addition of species; changed environment; (including new culture).

Climate change x disturbance.

DIDN'T TYPE: Concept-2.

Having established integration of history, ecology and conservation. Physical, biological and cultural forces.

Four Lenses in Time – 15,000-Present; 1600-1850-Present; 1950 – Present; and Future

15,000 years 500 years 150 years 50 years

Three time periods – broadly informed by different h-c approaches.

(1) Paleo, geo, archae

(2) Historical

(3) Quantitative aerial; scientific; regulatory; (???)

(4) Future – scenarios

Covers the three predominant cultural periods.

Covers major forces to understand to interpret land. Very difference predominant actions; relative role/impact of natural physical process and humans.

Rationale

II. Why Martha's Vineyard – could use any landscape to illustrate these points. Yellowstone - geological and fire, Labrador, Yucatan – ancient people, etc. Part of coastal and combines elements best of all. Large enough to be varied – towns, geomorphology, vegetations, cultural practices. Also change of people.

III. Three Time Periods.

Major historical phases: processes shaping island; role of humans. Each provides critical insight to today and the future. Also fits neatly – 15,000, 500, 50.

Critical perspective for understanding and interpreting the present.

Options/motivation, guidance for vision forward.

Geography and Location

- Exposure – prevailing winds versus Nor'easters versus hurricanes. Modifying influence of vegetation.
- Processes – fire [part of exposure?]
- Topography
- Moderating influence of the sea.

Landscape Interpretation

IV. Future Vision

Accommodate growth and humans; preserve, sustain nature intact.

MV Book Intro

One of the beauties of work on coast is that it provides this metaphor

6-21-11
Drive to Naushton

Shoreline as metaphor for island ~~and~~ and ~~ecosystem~~
more generally.

Incessant wave each different with imperceptible ^{some waves, each move sand, longshore currents never ending} change. Day to day ^{seasonal w/ energy etc.}

Human activity - repaired ^{sand accretion, tracks, mounds} but with legacies ^{irreversibly - fade - like days or years}

Come back ^{intermittently} - change is subtle, but real, no major shift in process or overall structure. Same basic entity, same familiar beach + place.

^{100 to} Come back in hundreds of years and, with care and good beach marks - measure substantial change ^{Operates the same if you don't look carefully can't see changes. No change in process.} hundreds of meters. Yet basic ^{structure} ~~structure~~ is ~~the~~ same - beach, dunes, barriers

Brian - 1840 map

Analogy to vegetation - chronic growth

But not all is so clearly in equilibrium ^{Phenomenal - to see such geological action over a lifetime.} - in the intervening century, not just the daily, regular methodically changes.

seed rain plants grow

- ① Episodes - ^{Impacts - some recover, some don't} some return, some not ^{Some more process forward in a major step.}
- ② Break throughs (e.g. to new ponds)

2cc. Hurr/fire

lost old ponds): Real destruction + loss; Real creation. Fundamental change in structure or process possible

- ① Hurricanes; n'ovosha, human agency - can - can abruptly change system - Energy to reconfigure - erode, move, wipe out, open pond, fill - overnight a new landscape quantitatively (2-fold increase) or qualitatively (new dunes, no pond etc.)

Pond and (wind, people)

Most cases these "recovered" to some form, structural processes as before - and yet not the same everyone would agree. Even if similar structure + words used for them

These can be temporary, ~~enduring~~ or permanent (though nothing is permanent) - pond openings hours, few days, years or more. For fishermen trying to get out to wasp or ferry operators dealing with sticky tides + currents - a new reality. Semi-permanent. Impact

[Cape Page beach never breached?]

For Edo Joke who owns the last farm and has been gone since 30s - temporary, ^{more enduring} ~~more enduring~~ but transient, will heal but not return

For Squibnisset Pond Indians - the openings ~~may~~ have seemed enduring - open for thousands of years for us these seem improbable as large dunes, protected by 2 highlands, + never seen open by anyone living. Yet mounds of shells tell of very different story - day from the past - potential for the future, or not.

Reality of the day is transient

Like any metaphor or model - useful for thinking
not predictive, not all encompassing

① Change is constant - v. popular adage - but not ne.
rapid, indeed for most of history, imperceptible,
long periods of stasis - equilibrium that is dynamic
- Change is episodic - LT Average composed of punctuated trajectory

② Trajectory ^{World Ecosystem} - not same - diff comp + configuration
amount of species. ① Driven by constant E, ② constantly recovering
from some past event. Never stable + never in abs. equilibrium

③ Over even v. long periods remains quite similar
recognizable elements - beach etc, recognize that
may change much + still be broadly similar

④ Punctuated by extreme events - may appear
irreparable - oak forest dying, beach & reefs
But most repair - still beach + forest, still
operating fine, nothing catastrophic

Some don't recover - extreme, or system positioned
in fragile place or threshold event - passenger
pigeon, heath hen

Can push into new condition - may still be
beach but no pond or part of beach or
forest.

In almost no time system back into quasi-equilibrium
this becomes new standard occurrence
with little LT repercussions

My ~~be~~ enduring legacies - physical, bio + cultural

ST + LT - water sh's salt for some time

Human legacies in woods, tree form killed

pass. We see breach at Norton Pt - envision it as permanent ^{Not as transient in recovery}

Or Wamp traditions of land connected + part of

Enduring
Cultural
Legacy



Mainland - cultural knowledge of immense
chgs + their potential

Regime shifts

① Extreme events

② Near tippy pt

③ Chronic Δ (climate) or Δ inputs

Repeated - New E or for can keep system in new condition. Not necessarily a lot needed - like fire every 100 yrs to keep out hemlock

interactions - something that happens w/ another regime



Lessons. Can't go back, time is as relentless as the tides. Chgs on land are irreversible as shifts in the S Coast of MV

Most of time expect little chgs - don't know that isn't ongoing universal

Can get episodes

• Most cases these look harmful but not ^{will recover just fine}

crisis - will know to adjust

• In some cases will not - but situation not transparent or predictable cannot easily know when

Times quite diff to predict

Recovery can be slow, legions can erode

Most cases - human ^{restoration} ~~restoration~~ ^{unnecessary} ~~unnecessary~~

Mitigation extremely ~~important~~ uncertain - a
stress + disturbance itself and no ^{guarantee}
unintended consequences or bring on things
concerned about

Not easy to prevent - relentless + large magnitude events
v. difficult to prevent. Unintended consequences -
by installing armorment to one beach, alter the next
as ↑ force of erosion or deprive next area of sand
Restoration unnecessary, or marginal gains or negative and
unintended impacts

Oliver

Book Ideas from Illustrated History of the Countryside 3-06-12

Start with photos and list of landscape features, aspects, items with question of how they developed, what they mean, what their future is and how we might regard them from a conservation perspective – stone walls, sunken roads (holloway), stooled oaks, quansooed trees, scrub oaks bottoms, grasslands, wood pasture, fences of different types, receding shorelines, pines in row. Might approach this form different scales – shape of island; distribution of towns, ponds, harbors; distribution of coastal ponds; topography – hills, plains, coastal ponds; specific features. Patterns of conservation lands.

Would start the book right out as engaging , photography filled, diverse. With focus on landscape, nature, some culture, and conservation. Past and future

Organize by scale, age and processes

Photos – make sure large enough and that all have some element of explanation so people know what they are looking at.

Landscape views from air – could pick these out from GoogleEarth: Plain to moraine; up coastal pond to plain; Cape Poge to Edgartown; Keith and Allen Farms; Katama to west down coast;

Illustrations (different text from boxes or text) - long description; old maps; cartoony maps; large maps with marginal box-like legends

Chapter Beginnings – Large photo covering opposing page and part of page;

Boxes (side notes) – with detailed text exploration issues. Smaller text. Ancient versus planned countryside; pitfalls of pollen analysis; Pitfalls of place-names; Sample entries from Domesday; Maps and Map-making; Evidence form the air; testimony and tradition; rats; weeds; ancient stools; particular species of plant – oxslip (Hudsonia; Juniperus; etc.); people; laws; specific trees or forms; distinctive place names; non-native species; specific ancient ways; construction of an ancient road; famous bridges; highway vegetation; specific conservation areas; soil formation – pingoes 9or glciers; or Sandwich Plain vs Great Plain); questions to ask of depressions – where do we get pollen and sediments? Different types of holes in the ground; vernal pools, kettleponds, glacial scours, dammed ponds; first recoded fenman; eels; individualoistic stems;

Real Boxes – Coppicing Plants; coastal erosion;

MV Boxes – history of cedar, hemlock, white pine, spruce;

Side-by-side: air photo:map; illustration:photo (ancient and modern); Pairs of historical maps for different areas contrasting the patterns and land use.

Collection of photos illustrating contrasting similar elements – types of walls; forms of trees; qualities of woods;

Summary pie chart on forests since 1850 – area of ancient wood lost; areas of new wood gained; areas of secondary woods lost; (include by which process?); or lost before 1850 to be 100%.

At End – Descriptions of Walks – Map, air photo with site pointed out, photos of landmarks and scenery, plants. Hayley Wood – best known; Glen Tanar – Caledonian pinewood; Hatfield Forest – last wooded royal Forest in England in which all components survive: deer, cattle, coppice-woods, pollards, scrub, timber, grassland, fen – can imagine the Middle Ages; Upper Swaledale – remote and independent; Lizard Peninsula;

DRF – Show maps 1850 vs modern and roads especially abandoned roads – would show how easily roads are relaid in said and gravel if compared with e.g. Lincoln or Concord or a coastal town on bedrock.

Development of woods bad for coppice plants – shade, resources; need opening; wildwood atmosphere develops form trees fighting among themselves since woodcutting ceased.

Support the small farmers at the limits of farming – don't indulge in the excesses of agri-business; would maintain ancient field-systems, moors and fens; historic landscape survives although not in full working condition; no cereals; need sheep and cattle whose existence is precarious;

Meaning of landscape associated with historical events; people; need to bring biological and archaeological conservationists together;

Wood pasture practiced form Neolithic period on; pollards incorporated in Somerset trackways;

Conservation has been flourishing since the first printing of History of the Countryside. Unclear whether it will last. More people and fewer people per house.

“Deer flourish even more than conservationsists. They are an ever increasing threat to woodland...” “Deer are the biggest problem in woodland management today.”

Woods not on land good for growing wood but bad for anything else.

Saw invented early; but Anglo-Saxons split big logs with wedges.

Successive replanting of conifers kills understory; Storm of 1987 October plucked out conifers left ancient woods;

Most medieval buildings made of as small logs as possible; roundwood;

Import timber; harvest local wood

Lack of stable past – no stable future re conservation pressure;

Nonsense of planting trees where they grow already

Possible to continue traditional management – employ woodmen with small-scale machinery and to expand coppicing, which has been occurring in last 20 years - :brighter than at any previous time this century”

Deer – huge issue; also myriad little acts of vandalism by infringing on conservation areas;

“o treat a landscape as a garden devalues both gardens and the general countryside”

Meadow – that which is mowed for hay vs pasture, which is grazed by farm animals;

Grassland disappears – by plow; poison; development; succession; small change in management – mowing instead of grazing; mowing at different time; cattle vs sheep; mowings need to be removed or else fertilize;

Heath – need adequate grazing to keep down the birch and oak;

Woodsmanship – separate from destroying woodland; part of civilization;

Wildwood not removed by fire – just sprout; can't burn wood easily; grub up the trees; animals graze – sheep, cattle, goats; cut down, stack up and burn;

GB – few shade tolerant species.

Pseudo-history: stick to documents with no fieldwork; rely on generalized contemporary documents; take documents at face value; copy what other scholars say; treat plants and animals as environment;

History of land since Last Ice Age; roles of plants, animals and environment in history; not just people, history marginalize others.

How to identify the abnormal – little woodcutting; many deer;

Martha's Vineyard Book
DRF notes – July 2012

Follow up on Rackham

Design.

- i. Martha's vineyard icon for each chapter – black and white; pattern of interest - Indian, land-use, hurricane, conservation land, moraine.
- ii. Each chapter opens with a photograph – opposing page or crossing to 1/4 or 1/3 on chapter page. Landscape or oblique aerial or specific item.

Figures- photos, figures, new and old maps.

Sections – 4-5 each with full photo?

Sidebars of Various Width – side column with a photo or illustration; or side and central column with only left column text; different fonts or even colors or full page or even two on an issue.

Figure words for each. Some dense – maximum word; some with many illustrations.

Sidebar Topics - Examples

Meadow, Stool, Sprout, Guernsey, Sheep, Ancient Woodlands, Drift whales, tree planting, Dr. Fisher, Ancient Ways, settlement patterns, History of town appointments – Tisbury, mills, mining, boulders, coppicing, deep road cuts; open grown trees, old field species in the woods, ancient ditch and bank, abandoned cranberry bogs, wharfs, jetties, *Wildland and Woodlands & F Vision*, Coast and Geodetic Survey, serendipity, Massachusetts blessed with 1830, coast doubly blessed with Coast and Geodetic Survey, clues to history

More Vignettes/Side Bars

Hurricane Chapter

- 1635, 1815, 1938 – variation in landscape condition
- Naushon – why so many uproots? Beech that survive, large size so blow down
- Ted Fujita/Emery Boose
- Nor'easters – full page or part of a chapter
- Hurricane Bob on the Vineyard
- Global change and hurricanes
- Evidence – mound and pit
- Details on hurricane structure – wind, meteorology, wind curves
- Salt spray damage – non-wind – highly selective, pines at Wasque – Quitsa Pond
- Other people
- Tree rings and damage

Paleo

- Invisibility of people, land, land separation
- Little Ice Age
- Natives – White pine, White cedar, pitch pine on Nantucket
- Ragweed sequence
- Pete Ogden/M. B. Davis
- Short distance variation
- Pollen and county
- Species representation
- Hemlock decline, theories – elm
- Coring and covers
- Peat burns
- Animals – beaver
- Ice House – so sediment
- Logs at sea
- Fire
- Serendipity - Moshup, Squib Ridge

Archaeology

- Beth Little/Elizabeth/Guernsey
- Lucy Vincent Beach
- Hornblower Site
- Richardson recollections of Ritchie
- Artifacts
- Looting

- Lost Information
- Cronon's ideas.
- Comparison of various cultures – houses, subsistence, etc.
- McAndrews, etc.
- Lost middens – use
- Lost sites – sea, development, re-use
- Corn/three sisters, different histories
- Neolithic Man – domestics
- Drift whales.
-

History

- Fences – stonewalls – types, distribution
- Rock mining
- Cellar holes and foundations
- Mills
- Ancient ways
- Documents
- Serendipity
- Coast & Geodetic Survey, Whiting, Boehm, H.
- Ha-Ha
- Dr. Fisher
- Soil horizons
- Manuel Correlus State Forest – planting
- Primary versus secondary
- Repeat Photos
- Forest change 1950s →
- Tree forms.

History – Condensed Notes DRF notes – July 2012

Forest

Dominant forest cover today – dominate throughout pre-history; most intact part of the landscape. Undervalued and appreciated; not hot spot; not heavily disturbed diverse areas. Low diversity; studies emphasize rich forest.

How did forest recover so fast? Mechanisms? Generalities? Use for restoration?

Ho – Ancient woods even-aged; former woodlot; oldest trees; sprouting clumps – similar age.

Ho – Vast majority early 20th century as ↓ farms, ↑ forest, ↑ coal. Where are stools?

Comparison – 1850 and today – specific details: West Tisbury tilled fields, forest patterns Tisbury Great Pond; alternatively highlight little change and great change.

Global role of forests.

Forest recovery – stab by H. D. Thoreau = Succession. Pitch pine into fields as advanced guard of sentinels followed by oaks dispersed by squirrels, jays, pigeons; works broadly but many areas lack pines; pure oak and short time.

Importance of history? Differences in forest. Accommodate with conservation. Why big intact areas? Vines? Open woods. Pitch pine. Fields.

Clues to land-use history – sprouts, stools, growth forms; size; understory; invasives; artifacts; blow down; fire.

Forest types – Beech; oak-Huckleberry; oak-Huckleberry with scrub oak; pitch pine-oak.

Forests – Have history, inertia and trajectory, future; knowing history, understand trajectory, anticipate future; interact with environmental change; interject this in management and conservation.

What was pre-settlement forest and how was it changing? How has 400 years of history altered this? What is modern trajectory and what will change this in the future? What guidance does this provide?

General mesophication of forest since 1900 as tree species increase that were more common in the past.

General Themes

Details affecting land use: agriculture, mills, sheep, roads, disturbance, settlement pattern; processes important for conservation.

Martha's Vineyard versus base of Cape – land cover, houses, barns, fences.

Points in Time – Breveton, Abundance; H. Thoreau – cutting it all down; Pete Ogden – no forests; Steinbeck; McKibben.

Associated wildlife dynamics.

Local story with regional to global reverberance; era of change; completely forested; ruthlessly settled and deforested; peaked and reversed; commonplace features still exceptional – stonewalls, cellar holes, borrow pits; wholesale change primitive to agricultural to industrial to cosmopolitan; greatest environmental story in America – McKibben.

**Book – General Background
DRF notes – July 2012**

Background – WWHT, Labrador, HEW, Coastal studies.

Influences – European, American History; Old Field Studies.

Approaches to conservation – history, ecology, pragmatism, people; serendipity, comparisons – other regions, countries, cultural landscapes.

Lessons – Hayley Woods, Keith Kirby, Peterken, Sjors, H. D. Thoreau.

Broad application.

Wildlands and Woodlands – apply to extreme – Maine woods, suburbs, Martha's Vineyard.

Opportunity for conservation.

Landscape of surprises – deep woods, beautiful farms, diversity.

Martha's Vineyard – extreme cultural landscape.

More processes / sq mi

More variation - destitution to opulence

Dry + barren to wet, moist, rich

Sea based to land based

Broody sing, antagonizing complex

① Use to illustrate what can be done for a NE landscape.

② Illustrate an approach that takes off from standard histories - includes the land and people in it.

John Varkand.

MV

Diverse yet commonality

All know ferns, on board, kids, workers
 anxious to make it,

VIT traffic, hill, bridge

They spread across landscape into corners
 thick + covered

thick forest - hidden houses, small roads
 Private - hidden, many accessible

Chilmark (Hills), Etown etc.

~~Both Woodlark + Cons targets + Protection~~

~~next part~~ Compare Cont World vs Modern Forest

~~EW over time - graph~~

~~Figure out some owners to lands - journals or
 account books~~

Frames the questions needed to locate oneself.

Helps to motivate, organize and guide conservation.

Frames major ecological insights.

I. Paleo – Physical processes dominate; benign culture – Climate, Geology, Indians, Geography and Location. Paleo data, Indian maps, lake level, climate curves, sea level. Take home messages. Sea level ultimate driver.

(1) Glacial geology sets template, controls structure (topography; sea level, geology, Indians, climate change, fire, hurricanes, rocks, beaches, drainage features – sapping structure, streams, lagoons and ponds).

Land is only marginally dynamic – there this is great – barrier beach breaches; Cape Poge, etc., reconfiguration.

(2) Vegetation variation – ^{structured by} highly responsive to glacial geology: Soil texture; height above water table: then location and roughness and vegetation as influence fire; exposure – wind and salt; temperature/seasonality = bottoms.

(3) Climate change major drive – generally gradual occasionally abrupt; long periods of stability; underscore buffering of system.

(4) Humans and disturbances – insects, wind (hurricanes) invisible – chronic factor; nothing abrupt, no reason to clear; fire for openings, for game = habitat; no fields.

(5) Remarkable abrupt shifts due to climate. Largest oak to beech, parallel to ENA and coastal area. Lake level drop; influence of

(6) Hydrological bubble – freshwater.

Conservation

- Template for variation – broad patterns, landscape-level, gradual boundaries.
- Landscape driven by natural processes; little need to manage.
- Vegetation structure and species missing from present; Old growth; hardwoods and mixed forest. Forest dynamics structure – old trees, CWD, damaged trees, uproots. More beech, very little open land.

Hurricanes – 1st Section; bring up again.

New England-wide; Martha's Vineyard – specific.

Coastal Ponds

Forest damage

Bent tree structure.

II. Native Period – Agrarian Period – Tourism

1843; census; farm journals; newspapers; fishing versus farming.

Predominant forces – human and domestic animals.

Living off the sea and increasingly – land; whaling never as big as ACK, New Bedford, etc.

Never self-sufficient – wood trade; easy movement

Continuation of physical and biological processes as human predominate; modified by and respond to them. Work with the land's tendencies. Moraine versus outwash; shelter harbors versus coast; up-island farming communities versus down island harbors and commercial centers.

Bigger economy and world. New England, eastern U.S., Europe.

1848 map patterns – fields – grass coinciding with water [excluding plains]. Necks – pastures; water and confined.

Ecological – thriving grasslands and pastures; open, short, varied, scrubby; animal shorn, not mowed; no herbicide, pesticides; scrubby woodlands; burned over-fields, plain.

Stream and pond shores trampled, eroded; ^{drainage} streams forded, dammed, controlled and contested; water flow greatest but flashiest; erosion.

Dunes and barrier beaches trampled; dunes eroded.

Woods cut.

Soils plowed; native flora locally extirpated.

Channels and canals dug; embankments formed.

Wood imported – lots else.

Period of fire – clearing; amendments – seaweed, shells, ash, organic farming heyday.

Vegetation – shaped by direct impacts of sheep and cows; indirect overlain on soils; geomorphology.

Conservation

As every tree establishes and grows microbial changes – wind, T^o, water.

Thriving open land – dynamic, shifting; rotational; animals; densities; owners; use.

Missing – old woods; continuous woods; 1848 map – show plain as distinct; also bottoms.

Forest recovery – Human and sheep and animal decline.

People off land into towns; more produce from off island; less extensive use – sheep – (not a comestible in any case).

III. 1950 – Present Defined by H. B. Hough – new era.

Localized hard deforestation, parcelization, exclusion, shredding and undermining.

19th C – land open – to view; owned and worked expansively free roaming – animals and people.

Vegetation – broad-scale relaxation punctuated by intense alteration and fragmentation.

Interaction: physical template; biological recovery from past activity; current intensive uses.

Need to know

Broad location – relative to physical factors – moraine, geography (distance – coast, moraine, etc.)

History of past activity. *+ time since + current activity*

Time since – farm abandonment, last fire, etc.

Current activity.

Ecology – landscape patterns, oak, pine woods with grasses, tree form.

Conservation

- * Manage for past x manage for future.
- * Broad forge more active alliance – 7 gates; woods; PHA; S meadow continuous fits – not worth cutting, managing and little interest. *How much is there? e.g., old forest* Old forest – intact; no management; will be shaped by natural process; stone walls; woods roads; quarries; channels, drains, cellar holes.

Open lands – Farming as conservation management – organic farm; expansive pastures; scrubby pastures and margins; crops.

Fire – overblown and impractical: safety; air quality; expense; limited; places where once every 10-20 years works.

State Forest – Plain

Sculpted mowed boundary – firebreak and habitat.

Eliminate plantations – young and old.

Bottoms – cut; very occasionally burn? Open through where possible; recreate; liberate.

Oak and pine forest – grow up.

Observation Tower

Alliance – Tourism and Conservation

Trails

Title

Grains of Sand - features to lose.

Menemsha and other trees.

Quawson

Open field Cedars.

Title

Distinct vegetation patterns.

Access - woods, beach, fields, plain.

Most people won't use it; most people don't need much; will just pass through.

Ecological - playing out response to: reforestation, environmentalism; changing attitudes.

Deer, heath hen (prior), turkey, osprey, deer, coyote, herring, seals, ticks, moths.

spp to focus on?

Topics

Overarching Themes People and Nature – humanized landscape ecology and conservation cultural landscape.

Ecology and conservation – interpretation and attempt to manage and protect landscape – both inherently intertwined; both historical, scientific, subjective aesthetic.

Interpretation – Integrates socio-biophysical in temporal context many processes shape land; people, biology and physical processes adjust and react to these and continue to grow; more changes. Deep into past and continuing into the future.

Inertia – what happens today is very dependent on the past, may be contingent on our expectation for the future. What we do, what natural forces operate on, are conditions handed to us from history; but the entire system is in motion-erosion of features created in the past; plants and animals recovering from historical changes.

Even if we do nothing much will change. Without future changes in the system – i.e. enviro change.

If change occurs; inertia will condition the response – e.g. coastal erosion, shift in species.

To keep things the way they are – is impossible – but even to approximate, requires huge effort. World without us, 19th C New England. Entropy.

Human/subjective/emotions – strong and important driver of conservation and management. Wilderness movement.

NPS – preservation.

Science informs – generally not the primary driver and motivator; never provides an ultimate on answer.

Why Martha's Vineyard - The Perfect Laboratory and How We Got Here

If we wanted to create a laboratory for exploration of natural and human process to explore nature's patterns the challenges to understand these and then to apply them both in understating present and anticipating future, assisting with conservation priorities and management.

The grail of ecology is to understand nature's patterns as shaped by natural process and human activity to put together the certain frame of activities over the ages to understand the present and then anticipate where it's going (??) only half – combine with understanding of what to conserve – what does that mean? Understand the objective of conservation – keep some mixture of natural and cultural to protect the land from processes that disrupt process and continuity and understand what human practice can.

Harvard Forest, as an intuition, convinced that need to invoke history. Lots of history – real (??) (??). Worked on this with Glenn Motzkin – world's greatest naturalist – birds, plants, geology, but like me eclectic background not grounded in science. Shape of trees, geology, soils.

So looking for landscape – explored this Labrador, Sweden, Puerto Rico, Yucatan, NVT, Harvard Forest area.

New England – years of study, fascinating patterns and history human history viewed as largely positive cultural attributes worth saving. No Indians, geology controlled broad valleys, hill tops, narrow valleys, and intriguing large sand plains.

Looking for an ideal laboratory with high visibility, high stakes and great values. So where would you go to find a perfect laboratory to explore these issues – combine important conservation landscape, diversity of features, and of human activity? Only one answer – the coast. Huge advantages and opportunities, array of islands and capes, contrasts but constancy.

Physical - islands. Southern and eastern sides, vastly contrasting – one ocean, other calm by range of processes – hurricanes, Nor'easters, fire, coastal processes; gradients – island versus coast – internal; – forces on island.

Repeated (??) – shaped by similar forces working in different combinations – glacial, geology – moraine versus outwash.

Long Island versus Cape versus BI versus Ack, etc.

Cultural – ideal – resources – Indian – largest populations. Place where expect to perhaps have strongest influence. Moderate climate – resource – land oak – mast and (??), wetlands, shores, (??) and (??) – diversity of resources – marsh, bay, ocean.

Glacial geology – Lamberts Cove – USGS maps.

Early contact – Lengthy interactions and continuity. Mashantucket Pequot, Wampanoag.

Early and lengthy interactions – dramatic shift captured so well by Cronon.

Colonists – extenuated diversity of land use

Sea resources, land resources

Combined with physical

Sheltered harbor, fertile ground, (??) less.

Remarkable diversity. Among islands and within this island

Over remarkably short differences; geological boundary; Naushon, LU – oldest (??)

Spec old forestry and many beautiful (??) landscapes the Tarpaulin Cove and Hadley Harbor.

But where – BI – all moraine – no trees. Ack – (??) elevation and (??), little forest, one town

Cape and LI – extraordinary variable and another book as great contacts

Martha's Vineyard – perfect – contained moderate size might get to know a bit of it.

Moraines – contrasting and dominate the land, supported richer forests, diversity of ponds, 400' relief; immense plain, bold (??) to the coast; afford large population and diversity of cultural activity.

Evidence in towns – remarkable and distinctive variation. Vineyard Haven – village of Tisbury – Ferry, etc.

Vegetation and habitats – grasslands; forestry; oak and pine. Simple but varied, diverse, spp, endemics

Having identified the coastal region as the study, Martha's Vineyard as study site people enter picture. Science and ecology is all about people – not just people in nature and altering it but working with and around people to get to nature – landowners, NGOs, etc. Other scientists.

Coast – many scientists had focused on individual islands, landmasses, only one had done/begun what we proposed – look across islands and through time. PD. In fact I had worked to help core ACK. Decision to leave to Seattle. Graciously passed on the coast. Given contacts and some requests – all positive and helpful.

Setting and Stage

Topography/Relief

From analysis of expos and angle light source.

Sapping Valleys

Chilmark Pond – to moraine then tributaries to northeast. Tips just showing.

Tisbury Great Pond – northwest to moraine then tributaries towards the head of plain, northeast.

Two independent – Watcha and Oyster.

Edgartown Great Pond – all angled to head of plain with tributaries to ENE.

Most with minor tributaries.

Interesting fine SW to NE ridges in Cedar Tree Neck area, Duarte Pond and Tisbury Meadow areas.

Hydrography

Notes to go with Brian Hall's map – Water features and topographic 6-12-2012

No streams east of the line from Rhoda Pond to Mill Pond. Smith Brook west of Rhoda Pond only stream in Tisbury.

One minor exception – stream from red maple swamp to Little Duarte Pond, Mattakeset Herring Creek.

Two big streams – Mill Brook and Tiasquam River – very similar – both confined to narrow southwest to northeast trending valleys between two morainal ridges. Both largely wetlands or wetland confined streams; very gentle gradient. Both empty into tributaries of Tisbury Great Pond. Each collects very little water from tributaries. Why does west area of Tisbury Great Pond serve as an effective tributary – why not dry?

Other streams flow via gentle ground to coast.

Fulling Mill Brook and Mill Brook (c) to south coast.

Roaring Brook, Paint Mill Brook, Blackwater Brook, Smith Brook and many small streams to Vineyard Sound. Aquinnah – unique with highland and streams diving north and south.

Many ponds artificial.

Shoreline – run futures as sea level rises, what will coastal ponds look like?

Glacial Topography

From Map: Water Features and Topography 11 x 17 6-21-2012) (shows relief with shading)

Katama to Duarte Pond ~ outwash over moraine – topography is very subtle but distinct from the plain. Undulations and depressions – buried features so subtle. Includes small ponds – Duarte, Little, Dodger Hole, Jernegan. But very few relative to west.

Long bottoms only extend east to Oyster Pond. From there to Edgartown (Paqua and Jobs Neck east) they don't extend far up into the plain as the do off Tisbury Great Pond, Long Cove, Watcha, Oyster Ponds.

Also don't extend in from Chilmark Pond or Black Point Pond.

December 7, 2012

2012 -- Book Opening Idea

To get the audience engaged and to convey a number of the central themes and goals of the book.

Lucy Vincent Beach

Start with Indian skull story and the women, go up on top of bluff, Dig to find 8000+ years of history. See plow horizon and other artifacts of European history. Erosion of bluffs puts all in jeopardy, episodes through time. Bluff remnant of moraine but look down coast to left – flat open plain. Behind, coastal pond that engineers are struggling to save from draining/breaching. Fields kept mown these days by dense flocks of geese. Managing to keep openland open. Stand looking to sea feel eyes on back of head – turn and hills – houses, some immense – development threat and big houses.

All wrapped into one site – depth of history, understanding of landforms, need to incorporate the past into an understanding of the present.

Indian reverence – Randy reviewing site.

Then get into organization of volume, theses and themes. Inertia, legacies, template.

From 2010 -- Martha's Vineyard Introduction or Forward

Henry D. Thoreau quote: *Our woodlots have a history, and we may often recover it for a hundred years back, though we do not.... yet if we attended more to the history of our lots we should manage them more wisely.* October 1860.

When Henry Thoreau wrote this entry in his journal; in mid October of 1860 he was articulating his unique personal approach to understanding nature and considering how it ought to be managed, more wisely and effectively. But he was doing more; he was also championing an approach that would come to be championed by ecological scientists and conservationists a century and a half later. Every landscape does indeed have a history—of natural processes and calamities, of human impacts both direct and indirect and, of environmental change. This history of both the changes in land and the factors driving them can be deciphered through a careful reading of the landscape and other sources—and yet, in most cases we do not bother to do so. Most of our interpretations are based on an assessment of modern conditions, without considering the past. To Henry Thoreau this failure to read the land's history led to erroneous conclusions. And this incomplete understanding of what produced the present in turn led to faulty assumptions about both the future and effective ways to manage the land for specific objectives. In his daily walks through the 19th C landscape of New England, Thoreau saw ample examples to reinforce his conclusions of farmers who failed to understand the prior history of their woodlots and therefore they were completely surprised by the

consequences of their logging activities. Consequently, on his daily saunters he combined his intimate knowledge of the present—of the plants and animals and the land itself—with thoughtful exploration of the past. The shape of trees, the species themselves, the artifacts of earlier people such as stonewalls, abandoned buildings, charcoal and the arrowhead, clamshell heaps, and old corn hills of the Native Americans, and histories he could decipher from maps, town records and the words of predecessors were all brought together to reveal the changes that helped to explain his landscape and charted the course to ours today. And, thus today when we want to provide a sound interpretation to nature around us we make our ecological science in part a historical endeavor. When we then turn to conserve a species or a landscape or seek to manage for future conditions we too ground our actions in Henry Thoreau's admonition by applying his historical and ecological perspective. The development and application of this approach, along with a discussion of the many issues and questions that it raises are the essence of this volume. Though centered on Martha's Vineyard and its particular natural and cultural features and history it is primarily about a way to read and care for the land.

But, the focus on the Vineyard has two origins. As is fitting for a work that illustrates that in making decisions about directions forward that science has limits where aesthetics, emotions, and subjective considerations take hold, one motivation is scientific, the other largely personal.

The scientific rationale is the longer story, so I'll start with the shorter of the two. As a young graduate student in ecology and following a couple of years of coursework and a dizzying round of field studies in the vast and complex terrain of northern Canada my wife's family invited me for a month at the end of the summer to help their first year's effort to start up running an inn newly acquired by some friends. With my mind filled with studies in glacial geology, plant ecology and paleoecology and overwhelmed with the complexities of graduate life I took up residence at Lambert's Cove Inn, where two life transforming events took place. On a quiet evening on Lambert's Cove beach and over a bottle of wine my girlfriend accepted to become my wife. And a warm summer afternoon when I struck out across the island to explore this new landscape and vegetation I had a moment of ecological clairvoyance. Hiking across the undulating terrain south of xxx I broke out of the woods and from the hills onto an absolutely flat plain. With an open field stretching off into the distance and an equally level road extending off more than a quarter of a mile in another direction there was no question that I had left one geological and ecological world for another. Moraine to glacial outwash plain, undulating bouldery forested terrain to level rock less expanse of hay and corn fields, vegetable crops and, I would see later an expanse of low oak and pine that comprises the great Plain. Later that day I tracked down the island's only source of USGS topography quad maps, trimmed them to fit together, taped, and walked, my immediate suspicion to be confirmed. The map revealed a stunningly simple and compelling story. The island's equilateral triangle was a text book case of glacial origins. The two equal sides represented moraines that met in the northern peak.

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From ridges that were a half mile # and extended some five miles southeast and southwest these sheltered an interior flat plain that sloped gradually to the south and the open ocean. Moraines formed where two edges of the vast continental ice sheet terminated pushing debris, melting and depositing more debris and chunks of ice to form the resulting irregular hills. And all the while that the ice extended from the icy north to this warmer southern location it produced sheets and streams of (??) (??) covered with it finer debris and few rocks that deposited in expansive layers out to the sea.

With, my admittedly mixed evaluation from romance and ecological breakthrough the rest of the stay was a blur of work, brief exploration filling in further details of the geomorphologic puzzle. I departed with the Vineyard a special place in my heart.

Book about Martha's Vineyard but more – fundamentally about the ways we explore nature, interpret it and seek to conserve it into today and into the future. Book about ecology and conservation, and as we'll see because both these sciences depend strongly on an understanding of how natural and human processes have shaped the land through time – it is very much about history.

The object of natural history and ecologists is to interpret modern landscapes and understand the processes that have shaped them and the interactions between biological, geological and human processes that have given rise to them. The present is an integration of all of the processes that have taken place over cons. Some evolutionary – embodied in the organisms and their responses, other geological may work over long periods – like glacial cycles and weather, others like the endless push and pull of tides on the shore are ongoing and relentless. The impact of processes may be faint today – the influence of Native Americans before the arrival of European and others – the recent erection of houses, have a fresh immediate consequence.

Meanwhile, many of these same people seek to advance the conservation of these landscapes. This might mean many different things – maintaining individual important species or collections in abundance to survive and perhaps in numbers that roughly mimic those that we see today or know persisted in the past. Or, more broadly it may be focused on maintaining landscapes – of particular appearance or just in an intact and connected enough that it will allow natural processes to continue to unfold into the future. Or it may be (???) on the processes themselves.

But both the interpretative and the conservation had been made immensely more complicated by this reality of history. Since the present is an amalgam of different contributions of many processes and events that have transpired in the past, plus those (??) and processes at work today, the interpretation is enormously complex. Take every measurement that we might of the environment at two or three sites and we'll never be able to understand the difference between them unless we account for history. One site moraine, other outwash, one burned, one

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cut, one burned 100 years ago the other 200 and in a (??) sheep and cows grazed in the woods for.

Come back in ten years and, quite independent of any change in the climate or change in conditions and the site will be different – responding not to the present, but the past. Inertia in every site. And second, law of thermodynamics at work, incessant decay, erosion, wearing down of every substrate. Traces of past continually fading while new layers are being added. Some will persist, others are transient.

Not a new idea. In taking walks with a new appreciation of the landscape of Connecticut for ecology is a landscape of farms, wood lots and seemingly untouched protected forests I quickly realized that the first question that one had to pose in understanding the variation was what is its history?

And Henry Thoreau, perhaps the greatest explorer and documenter of any single landscape in history – that existed on his hometown of Concord, Massachusetts where his self-appointment job was to spend about half of each day sauntering and the rest writing up his notes and expanding his knowledge so he could understand his landscape and life clearly saw this. For starters he employed nearly every approach to understand the history – histories, old maps, archaeology, tree rings, stratigraphy, etc. But as he explored he saw the many levels and used them regularly in his (??) study. When he said that he could see the faint presence in the woods he was only partly being romantic, metaphorical and literal. He felt that he could detect the ancient (??) of these people; he doubted whether mounds for corn were very early European colonist or Indians and of course he found lots of artifacts. But he knew that their activity would leave lingering impacts even if he couldn't detect it directly. Obscured in many places by Ag, clearing, burning, logging, etc. he knew that if (??) efforts (??) his (??) Clamshells.

And he knew that these insights were critical to conserve – the application of ecology to management. One of the greatest descriptions of conservation based on history and the lack of acceptance by most people.

So then on to Labrador – all landscapes natural and cultural can employ anywhere Puerto Rico, Chile, Egypt.

Desire to apply it fully in most challenging land where complex natural and cultural processes joined to determine pattern in a landscape that was of critical conservation concern.

Book – General Background DRF notes – July 2012

Background – WWHT, Labrador, HEW, Coastal studies.

Influences – European, American History; Old Field Studies.

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Approaches to conservation – history, ecology, pragmatism, people; serendipity, comparisons – other regions, countries, cultural landscapes.

Lessons – Hayley Woods, Keith Kirby, Peterken, Sjors, H. D. Thoreau.

Broad application.

Wildlands and Woodlands – apply to extreme – Maine woods, suburbs, Martha's Vineyard.

Opportunity for conservation.

Landscape of surprises – deep woods, beautiful farms, diversity.

Martha's Vineyard – extreme cultural landscape.

VINEYARD

THE HISTORY, ECOLOGY, AND CONSERVATION OF A NEW ENGLAND LANDSCAPE

Foreword

Preface – The Origins of the Book

THE LAY OF THE LAND

Landscape History, Ecology and Conservation – ~~Rationale and Approach~~ ^{Interpreting and Working with Nature}

An overview of thinking that guide the organization, content and messages in this volume.

The Stage

Overview of the biophysical and cultural setting of the Vineyard in the context of the Northeastern coast and New England region.

THE LAND THROUGH TIME

Four Lenses in Time. The ecological history of Martha's Vineyard and New England is effectively explored in terms of four historical periods that differ in the nature of processes and changes shaping the land. Each period is best explored through different scientific and historical approaches and each yields complementary ecological and conservation insights. The heart of this volume examines each period through accessible text and illustrations using examples from Vineyard landscapes and concluding with a synthesis.

Shaping the Island. Pre-history to A.D. 1500. A millennial view.

A millennial exploration through geology, paleoecology, and archaeology of physical processes and human and ecological responses that gave rise to the island setting.

- i. Geology and Geomorphology
- ii. Landscape Dynamics
- iii. People

Shaping the Land. History - 1500 to the 20th Century. A centennial view.

An exploration through historical and ecological sources of the interplay of human and natural processes that transformed the early landscape with enduring consequences.

- i. Land-use History
- ii. 1850–the Map, Farms & Fields
- iii. Industry
- iv. Winds

Shaping the Present. Modern Period - 1950 to today. A decadal view.

An exploration using ecological evidence and regulatory data of intensive and novel forces that are transforming natural and cultural patterns at an unprecedented pace.

- i. Development & Tourism
- ii. Landscape Pattern - AW
- iii. Wildlife
- iv. Forests

Shaping a Conservation Future. Beyond 2100. An open-ended vision.

An exploration of scenarios for the future based on a consideration of history, ecology and the visioning process by island residents.

- i. IPlan – development, conservation, access
- ii. Cultural and Natural
- iii. Accommodating loss

Conclusion - Insights from Time and the Land

An exploration of themes and perspectives emerging from a 15,000-year perspective on the New England Landscape.

- i. Ecological insights: Inertia – melding of past, present and future; change as constant
- ii. Conservation Insights – manage with understanding of past, present and future; hubris – do nothing; value of mixed cultural and natural landscapes

EXPLORING THE LAND AND ITS HISTORY

Maps, photos and guides to different vineyard landscapes

Bibliographic Essays**Bibliography****NOTES ON DESIGN****Design**

Illustrated History of the Countryside meets Jefferson's Garden

- i. Iconography – MV map icon for each chapter – emblematic of content.
- ii. Chapter opens with a photograph – opposing page or crossing to chapter page
- iii. Figures- photos, figures, new and old maps.
- iv. *Sidebars of Various Width*

Geographical Templates and Map Scales

Consistent scales of mapping and data representation

1. *New England-wide: Six States plus Long Island*

Examples of maps: forest vegetation: European settlement and today; glacial geology and geomorphology; topography; climate variation – temperature and precipitation; Native American populations in 1600; conservation lands.

Examples of graphs: forest cover and human population 1600 to present; wildlife dynamics; climate space; climate over the last 100,000 years, postglacial period and last 100-2000 years

2. *Coastal Landscape: Long Island, Cape Cod and the Islands*

Examples of maps: geomorphology; HF sites cored and studied; Indian sites, artifacts; Sandwich outwash versus MV Outwash

Examples of graphs: Indian site density over time

3. *Martha's Vineyard.*

MATERIAL STILL WORKING ON

FOUR LENSES IN TIME AND ISLAND HISTORY

The ecological and cultural history of Martha's Vineyard, New England and most of the eastern U.S. are effectively explored in terms of four contrasting historical periods. These periods scale in duration, differ in the type and relative importance of the processes shaping the land, and are best explored through different scientific and historical approaches. In turn from each period emerge somewhat different but highly complementary ecological and conservation insights that will be explored in detail in each section and synthesized in a final integrative section. Each period is explored through accessible text and illustrated with maps, figures, art, photographs and specific examples from landscapes that can be explored by any reader. Each section concludes with a brief discussion of the emergent ecological and conservation insights.

Organization of the Volume. Types and strengths of different processes vary through time. Each period is investigated using different tools and each yields important lessons for ecology, conservation and our general understanding of the land.

I. Shaping the Island. Pre-history to A.D. 1500. A millennial view.

A millennial exploration through paleoecology, geology, and archaeology of largely physical processes and human and ecological responses. 20,000 years

Glacial geology sets template, controls structure (topography; sea level, geology, drainage features – sapping structure, streams, lagoons and ponds). Over thousands of years this has been shaped by sea level rise, climate change, natural biophysical processes like hurricanes, drought, insects and migration and by humans. Processes are generally gradual with long periods of stability; occasionally abrupt pulses from climate and storms. Tremendous buffering of system. Climate only visible factor.

Glacial Geology and Geomorphology. Physiography, topography, geography and soils
Sidebar – Glacial Geology

- Nathaniel Shaler

Paleo - Climate Change and Vegetation Response. Oak Decline

Climate curve. Temperature, precipitation, drought. Change in groundwater interacting with sea level rise, stream flow; influence on species abundance. Freshwater impacts – Stream flow changes, lake level changes – lead to spp. changes; ponds turning into wetlands.

Sidebar - Paleo

- Invisibility of people, land, land separation
- Little Ice Age
- Natives – White pine, White cedar, pitch pine on Nantucket
- Ragweed sequence
- Pete Ogden/M. B. Davis
- Short distance variation

- Pollen and county
- Species representation
- Hemlock decline, theories – elm
- Coring and covers
- Peat burns
- Animals – beaver
- Ice House – so sediment
- Logs at sea
- Fire
- Serendipity - Moshup, Squib Ridge

Archaeology. Fire

Culture continues today. Shaped the land – vegetation and wildlife. People change with climate and vegetation. Invisibility of people. Impress on land subtle. How much movement – mainland, up coast, trade? Does shift to a 100 mi² island represent a substantial change for Indians? High mobility. Humans were the major predator of many animals. Oak decline (Role of Beech)– How did this change in climate, environment, vegetation influence humans directly and indirectly? Periods of significant transition, opportunity and challenges – triggered adaptations; provide new spp. abundance and distribution. Not far removed from island formation and coincident with wetland formation. Inland -improved conditions for wildlife: mast for e.g. deer and turkey and people; more game for humans and milder temperatures. Coast: oak to beech and pine less clear; mast for mast, but less undergrowth. Beech more inimical to wildlife/people? No management against beech? No fire? Difficult to burn beech litter? Not able to manage with fire? Long transition. Rapid mortality, but lengthy succession. Young forest to mature forest conditions – 250 years? More edge and open conditions? Weeds and open land plants due to temperature and drought, thinner forests? People could have (but didn't) prolong this? Opportunity for Natives to manipulate the land - in transition plus species more vulnerable. Wildlife response?

Sidebar - Archaeology

- Beth Little/Elizabeth Chilton/Guernsey/Ritchie
- Lucy Vincent Beach
- Hornblower Site
- Richardson recollections of Ritchie
- Artifacts
- Looting
- Lost Information
- Cronon's ideas.
- Comparison of various cultures – houses, subsistence, etc.
- McAndrews, etc.
- Lost middens – use
- Lost sites – sea, development, re-use
- Corn/three sisters, different histories
- Neolithic Man – domestics
- Drift whales.

Ecology and conservation lessons

- Template for spatial variation – gradual boundaries driven by landscape variation – soils, moisture; significant island-wide variation.
- Natural processes dominate; change is slow with few notable exceptions
- Vegetation structure and species missing from present. Old growth – pine, hardwoods, and mixed forest. Forest dynamics structure – old trees, CWD, damaged trees, uproots. More beech, beetlebung and hickory; very little open land or successional habitat.
- People with an abundance of natural resources; highly adaptable.

Figures: timeline; map of Noepe

II. *Shaping the Land. History - 1500 to the 20th Century. A centennial view.*

An exploration through historical and ecological sources of predominantly human processes transforming the land and vegetation with many ecological and cultural consequences.

With migration of new people and cultural processes with global connections humans and novel processes importance become the dominant force shaping the land. The biggest changes are surficial and biotic but literal reworking of the land occurs. Biophysical forces are episodically important. The pace of change is altered dramatically. Agrarian Period – Tourism 500 years

Land-use History – through time

Continuation of physical and biological processes as human predominate; modified by and respond to them. Predominant forces – human and domestic animals. Never self-sufficient – wood trade; easy movement. Bigger economy and world. New England, eastern U.S., Europe. Native dynamics.

Dunes and barrier beaches trampled; dunes eroded; woods cut; soils plowed; native flora locally extirpated; channels and canals dug; embankments formed; wood imported – lots else; fire – clearing; amendments – seaweed, shells, ash, organic farming heyday; vegetation – shaped by direct impacts of sheep and cows; indirect overlain on soils; geomorphology. Thriving open land – dynamic, shifting; rotational; animals; densities; owners; use. Forest recovery – Human and animal decline. People off land into towns; more produce from off island. Railroad, roads, harbors, seawalls.

1850 Snapshot - Landscape Map - Patterns: forests, fields, fences, people, dams

Work with the land's tendencies. Moraine versus outwash; shelter harbors versus coast; up-island farming communities versus down island harbors and commercial centers.

Industry – Whaling, Brick Factory, Paint Mill, Oil/Candle

Era of Big Schemes – Railroads and tourism, big developments

Winds. Hurricanes and Nor'easters. Hurricanes. Coastal Ponds, Forest damage, Bent trees.

Sidebar - Hurricane Chapter

- 1635, 1815, 1938 – variation in landscape condition
- Naushon – why so many uproots? Beech that survive, large size so blow down

- Ted Fujita/Emery Boose
- Nor'easters – full page or part of a chapter
- Hurricane Bob on the Vineyard
- Global change and hurricanes
- Evidence – mound and pit
- Details on hurricane structure – wind, meteorology, wind curves
- Salt spray damage – non-wind – highly selective, pines at Wasque – Quitsa Pond
- Other people
- Tree rings and damage

Origins of Conservation

Sidebar

- Henry Whiting (Coast and Geodetic Survey)
- Hunting Camps
- Dr. Daniel Fisher
- Nathaniel Southgate Shaler
- Environmental Change - Wind, temperature, water, soils.
- Susceptibility to natural process
- Missing – old woods; continuous woods
- Traditional Agriculture – thriving grasslands and pastures; open, short, varied, scrubby; animal shorn, not mowed; no herbicide, pesticides; scrubby woodlands; burned over-fields, plain.
- Wildlife of the cultural landscape
- Missed Opportunities – Foster, Windy Gates (in next section?)

III. *Shaping the Present. Modern Period - 1950 to today. A decadal view.*

An exploration using ecological evidence and regulatory data of intensive novel human forces that are rapidly transforming natural and cultural patterns on annual to decadal scales. 50 years.

Defined by H. B. Hough – new era. Localized hard deforestation, parcelization, exclusion, shredding and undermining. Vegetation – broad-scale relaxation punctuated by intense alteration and fragmentation. Interaction: physical template; biological recovery from past activity; current intensive uses.

The shift to rapid and rapacious development with permanent reconfiguration of land surfaces.

Threat to the semi-natural landscape and emergence of major conservation activity along with island-wide thinking, planning and action. Vegetation variation – glacial geology, soil texture; geography; height above water table: roughness; exposure – wind and salt; temperature/seasonality = bottoms.

Development and Tourism

Landscape Patterns – Vegetation; Ancient Woodland

Wildlife Dynamics

Forest Dynamics - Insects & Disease

Coastal Processes. Sea level, Currents and Wind.

Sea level curve, coastal outline; bathymetric maps. Wetland formation. Fresh and saltwater. New habitat, big change in species abundance; new resources – plants and wildlife.

Sidebar

- Ancient ways
- Lyme disease - deer
- Water & Groundwater
- Organizations
- Access
- H. B. Hough
- Wind turbines

IV. Shaping a Conservation Future. To 2100 and beyond. An open-ended vision.

An exploration of scenarios of the future based on a consideration of history, ecology and the visioning process by island residents.

The Island Plan and its ecological and conservation applications.

Landscape Exploration. History and ecology revealed in Vineyard landscapes.
Insights from Time and the Land

Issues

Development – Limiting/Accommodating growth. Priority #1 – Island Plan.

Grains of Sand – features to lose.

Menemsha, Quansoo and other trees. Open field Cedars. Distinct vegetation patterns.

Ecological – playing out response to: reforestation, environmentalism; changing attitudes.

Deer, heath hen (prior), turkey, osprey, deer, coyote, herring, seals, ticks, moths.

Island Plan

Alliance – Tourism and Conservation. Trails. Access – woods, beach, fields, plain. Most people won't use it; most people don't need much; will just pass through.

Cultural and Natural Landscapes. Melding conservation, management and agriculture.

Manage for past x manage for future.

Open lands – Farming as conservation management – organic farm; expansive pastures; scrubby pastures and margins; crops. Fire – overblown and impractical: safety; air quality; expense; limited; places where once every 10-20 years works.

Old forest natural landscape – Seven Gates-Woods-Waskosims-PHS-Cedar Tree Neck. Shaped by natural process; stone walls; woods roads; quarries; channels, drains, cellar holes.

V. Insights from Time and the Land

Accommodate growth and humans; preserve, sustain nature intact.

Topics

Inertia – what happens today is very dependent on the past, may be contingent on our expectation for the future. What we do, what natural forces operate on, are conditions handed to us from history; but the entire system is in motion-erosion of features created in the past; plants and animals recovering from historical changes. Even if we do nothing much will change. Without future changes in the system – i.e. environmental change. If change occurs; inertia will condition the response – e.g. coastal erosion, shift in species. To keep things the way they are – is impossible – but even to approximate, requires huge effort. World without us, 19th C New England. Entropy.

Human/subjective/emotions – strong and important driver of conservation and management. Wilderness movement. Science informs – generally not the primary driver and motivator; never provides an ultimate on answer. History and aesthetics – strong motivators.

Science and history change – both as knowledge base changes, technology and information improve, and as attitudes, opinions, social context change.

Lengthy history – dominated by biophysical prolonged phase of extensive domination by human recovery and wild to give a mixture of cultural and natural. As this occurs – shredded by new wave of human. Permanent, driven ironically by love of human and natural.

Modern conservation – accommodates growth and humans – sustains nature and work with history.

Could use any landscape to illustrate these points: Yellowstone where tectonic geology, fire predominate; Yucatan where limestone geology and ancient people shaped the land.

Martha's Vineyard – special case of New England and eastern U.S. Transformed landscape. Simultaneously wilder as shredded by new human activity. Land where the physical template so clearly tied to history and one easily grasped and understood. Wide range of other processes. Cultural processes long-standing, intense in relative terms (e.g. Indians – most focused on coast; colonial – agrarian and maritime intense; development intense). Biological response diverse but striking and understandable. Biodiversity – quintessential like – landforms, history and people.

Conservation - Guiding Principles

Manage with understanding of the past and informed by ecology. Use past and ecology to interpret present and forecast future; understanding how the environment may change and species respond – anticipate the future.

- Neither history nor science provides the answers; never absolute answer. Science and history both change (as do human behaviors). No right answer. No obvious benchmarks. Real decisions and options. Subjective and emotional is strong driver of human action, not the rationale and scientific. Don't hold conservation up to a different standard than other major decisions. We don't make our major investments – cars, entertainment, houses, charities for rational reasons.

Hubris – human limitations.

Doing nothing – often a highly viable option. Doing nothing for a long time is easy for nature, difficult for people. Real distinction – active and passive management.

Mixture of cultural and natural landscapes; highly desirable – conservation, aesthetics, human nature. Cultural in nature is ok. Develop/No; harvest versus OG; salvage/no; fire versus sheep; cultural versus natural; state forest natural (??); plant; duck pond. Grasslands and Cultural Landscapes. What do we do with landscapes and features derived from past cultural practices? Reality – many cherished landscape and features derived by/from human activities or singular events. Persistent but transient. Motivation to keep them – aesthetic, romantic, historical biodiversity, science. Cannot preserve many, can restore and recreate some or at least mimic. Approach – determine historical process that created these.

Inertia – huge effort to maintain status quo – impossible actually, but semblance is huge effort.

Can do bold things, advance major conservation goals because they excite, intrigue, fascinate. Great if these are reinforced by economics – tourism, environmental sustainability, economic rationale – infrastructure.

No need for more research and study – not that more insights won't be useful. Continued study synthesis, updating thoughts. Reality – small, confined area – some of most thoroughly studied, evaluated and planted landscapes in U.S. Great diversity of organizations, collaborating with research and planning. MV Commission. Island Plan.

Protect large blocks and critical connections – (include underdevelopment) for nature and people so includes access. Need for intact blocks, less management. No mystery what these parcels are, but many priorities – trails, beech access, habitat and much overlap; specific management concerns and objectives.

Coordination needed among NGOs – competition healthy and some obvious niches – scale and focus, etc. Share information, contacts and resources. Plan and coordinate attack – contact with landowners, maintain regular contacts. Coordinate efforts. Commission is leading in getting out island-wide goals.

Ecological Issues and Lessons – Spread these across the chapters

Importance of location

- Exposure – prevailing winds, Nor'easters, hurricanes. Modifying influence of vegetation
- Processes – fire
- Physiography – topography, soils, water
- Climate – moderating influence of the sea.

EXPLORING THE LAND AND ITS HISTORY

Conservation Landscapes

State Forest-Greenfields-Pohogonot.Great Plain. Liberate and reveal the natural patterns.

Eliminate plantations – young and old. Bottoms – cut; very occasionally burn? Open through where possible; recreate; liberate. Oak and pine forest – grow up. Observation Tower.

Seven Gates-Woods-Polly Hill-Waskosims.

Chappaquiddick

Nomans

Squibnocket – Menemsha – Aquinnah

Vineyard Volume

11-27-2012

Distinct Products

1. Vineyard. History, Ecology and Conservation of a New England Landscape - Volume
2. Vineyard. The History, Ecology and Conservation Map
3. Vineyard. The Landscape Photos

Icon - Conservation as Grew. Conserve the Best
Save the Best
Save What's Left

Preface - Without conservation this book is only a memorial or epitaph

Fundamental mission is to advance conservation

Illustrate W+V - Advance MV conservation while providing an example of W+V - emphasis on Forest + farm, Natural + Cultural

Personal motivation for book - preface

Connect with Ben, Brewster, Jim - how to use it to advance conservation

Intro + Theme