Today's Objectives

- Understand how Sunset Beach lessons fit course objectives
- Understand changes to disturbance regimes, and how that affects management of protected lands
- Understand biological invasions, and how that affects protected lands
- Understand how land managers prioritize invasive species control
- Understand how social science recommends improved environmental education

Grounding…

- What is one thing you will remember from Sunset State Beach, as it relates to the course?
- How does that one thing make you feel?

Bill Wolcott

- What is Bill doing well?
- How could Bill improve his work?

Kriss Neuman

- What is Kriss doing well?
- How could she improve her work?

California Department of Parks and Recreation: Sunset State Beach

How are Parks staff doing at achieving CDPR mission and goals?

Quiz 2

- What does the invasive *Myrica faya* do to the soil in Hawaii?
- Name one of the major concerns that Vandyke and Holl relate about long time absence of fire for maritime chaparral.
- Besides knowledge, name two other factors that influence an individual's intention to act as a more responsible citizen towards the environment and suggest a way that one of these might be applied in an environmental education program.

Then and now, ancient human management and new factors: fire and invasive species

Grey Hayes, PhD

ENVS 196A

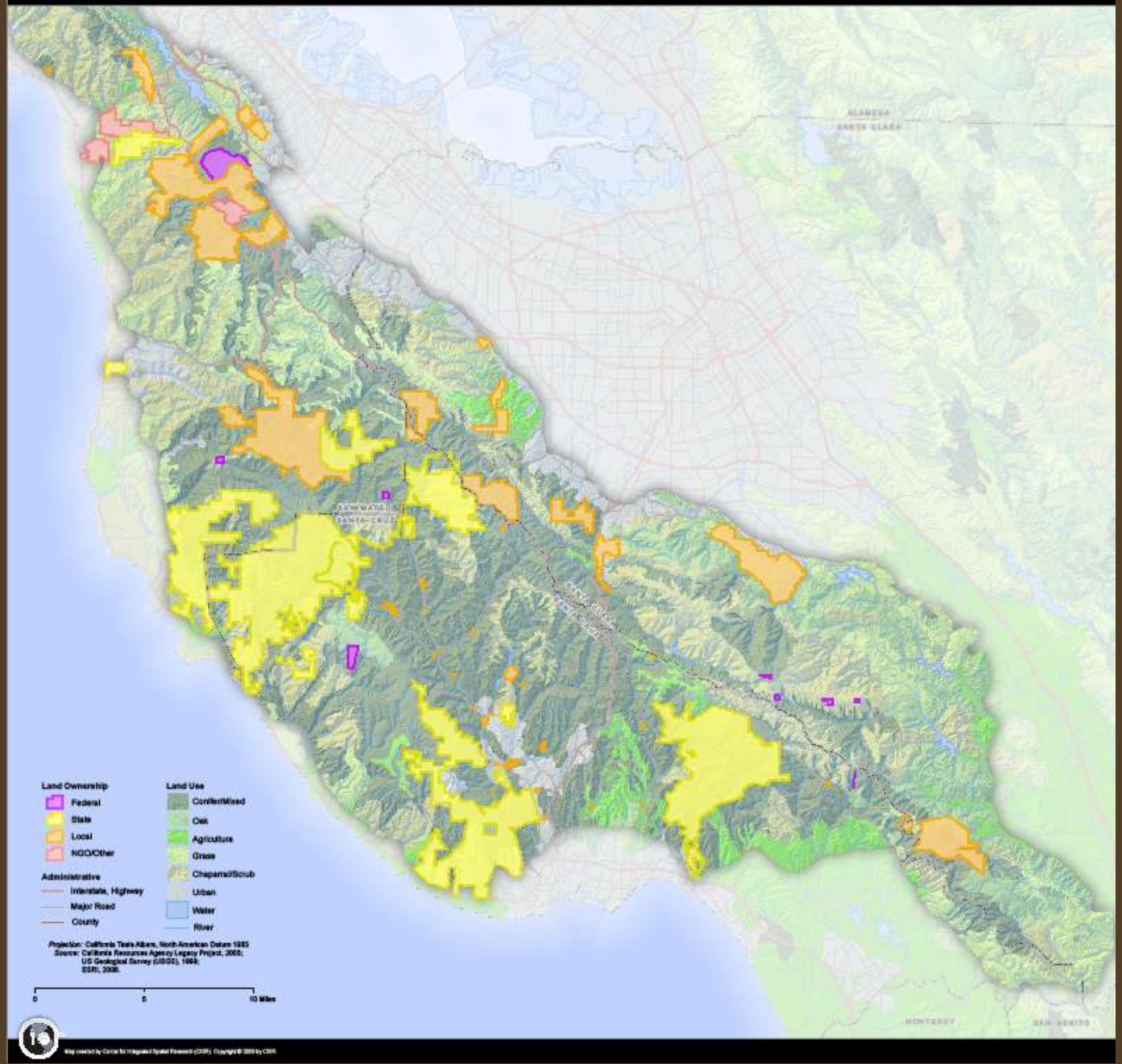
Summer 2013

New factors – why do we care?

Fragmentation

Public, conservation, and trust land ownership

Santa Cruz Mountains, California

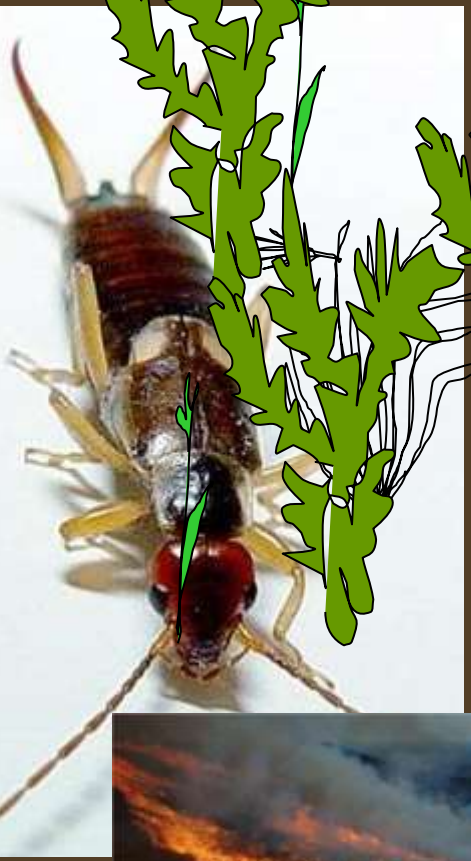


Sprawl

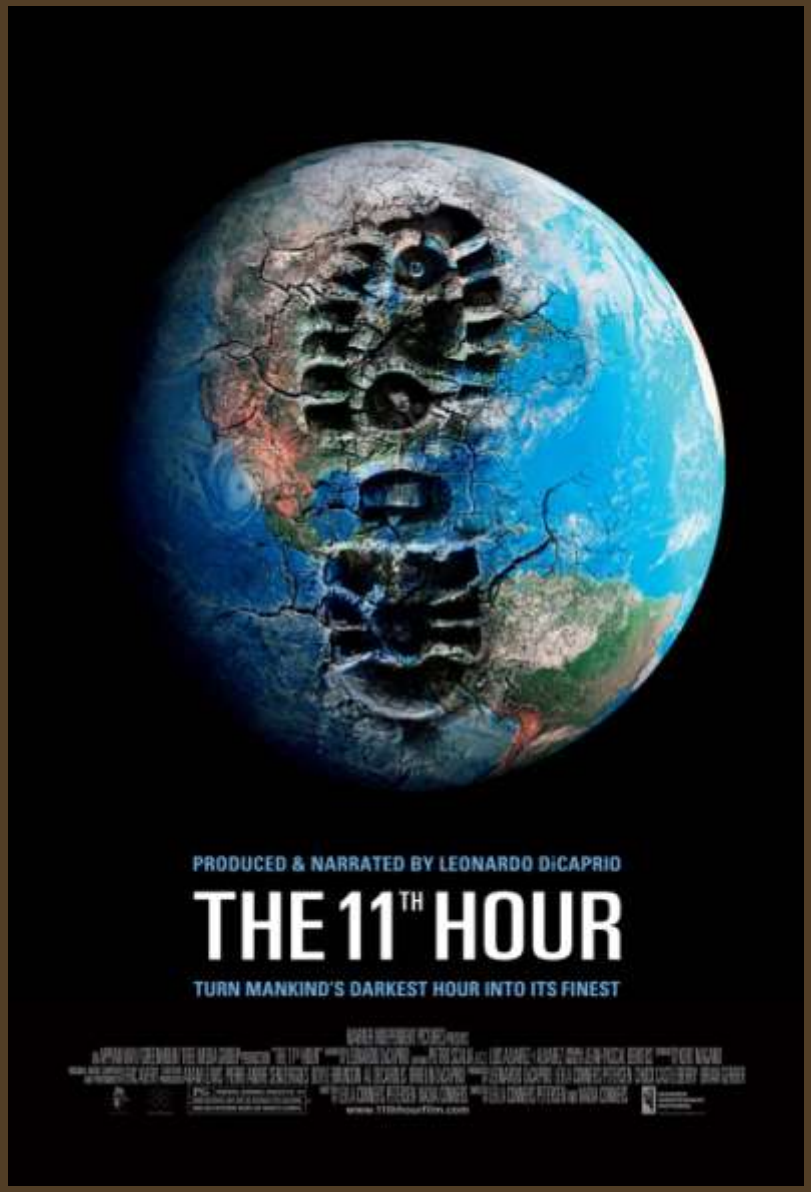
Changed Disturbance Regimes

Invasive Plants

Invasive Animals



Climate Crisis



Deep Ecological History

The way things were before

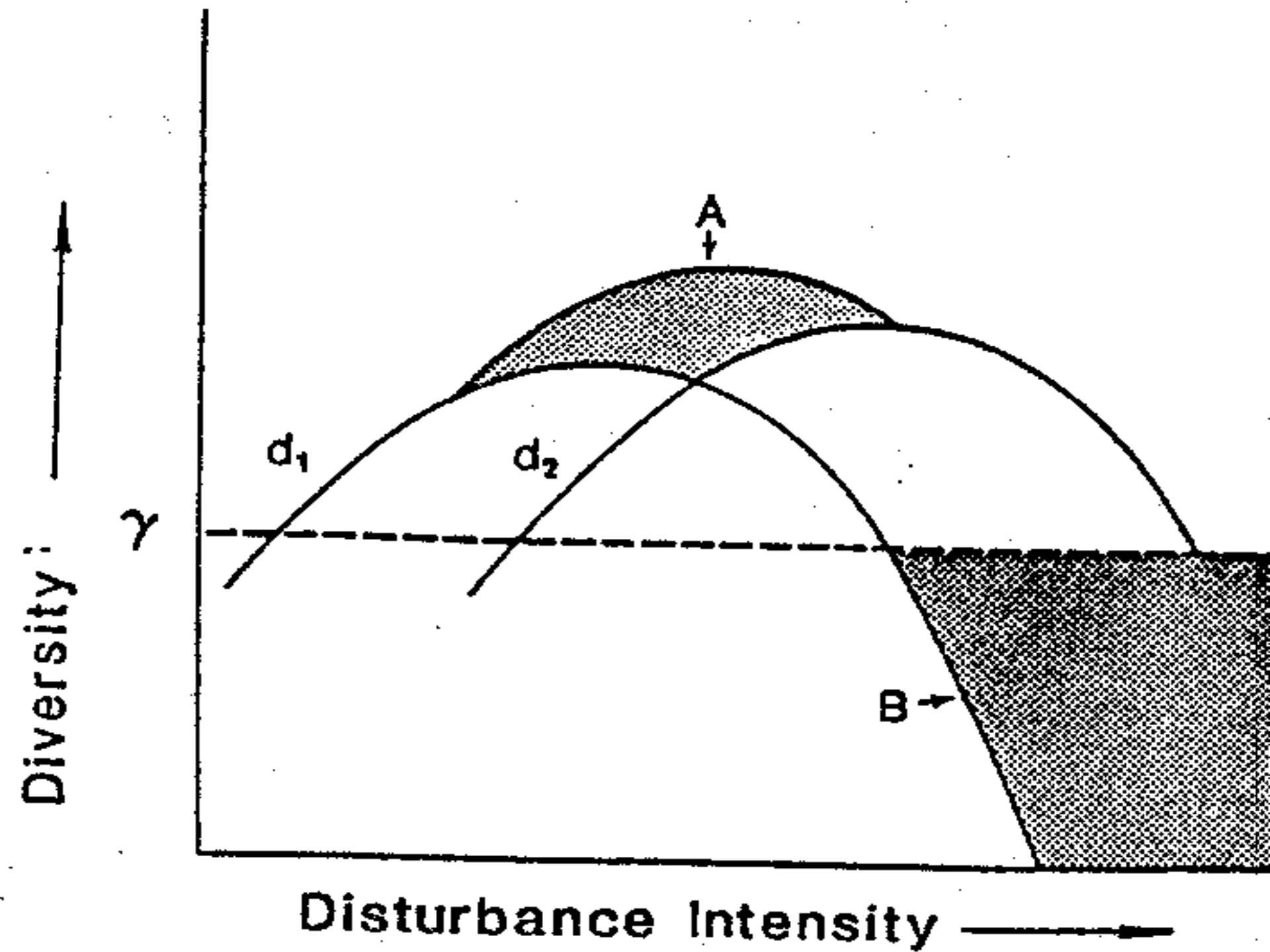
Deep Time…

More Recently…

What Evidence of Missing Disturbances?

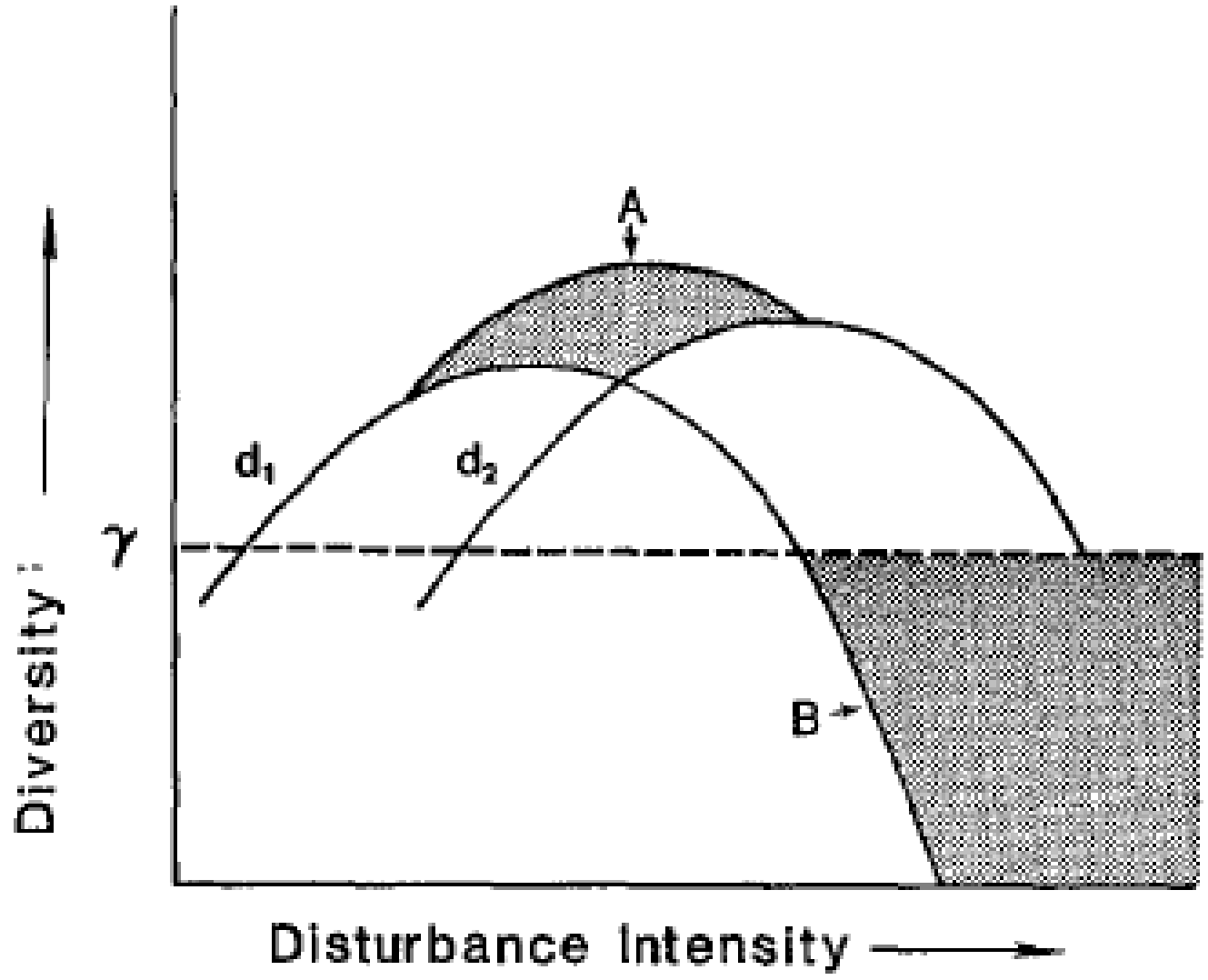
Other Disturbances…

Designing Disturbances for Protected Lands Management


A
d_1
d_2
γ
B
Diversity
Disturbance Intensity

“Fuel Loading”

How Correct is this Disturbance Regime?


A
d_1
d_2
γ
B
Diversity
Disturbance Intensity

3 Disturbance Factors

- Intensity
- Duration
- Frequency

Historic Patterns of Fire in California










2 million years b.p.

Ungulates

Fire

10,000 years b.p.

Exotics

1791

1950

today

Fire

<10,000 b.p.
Lightning fires
rare

10,000-150 b.p. Human fires common

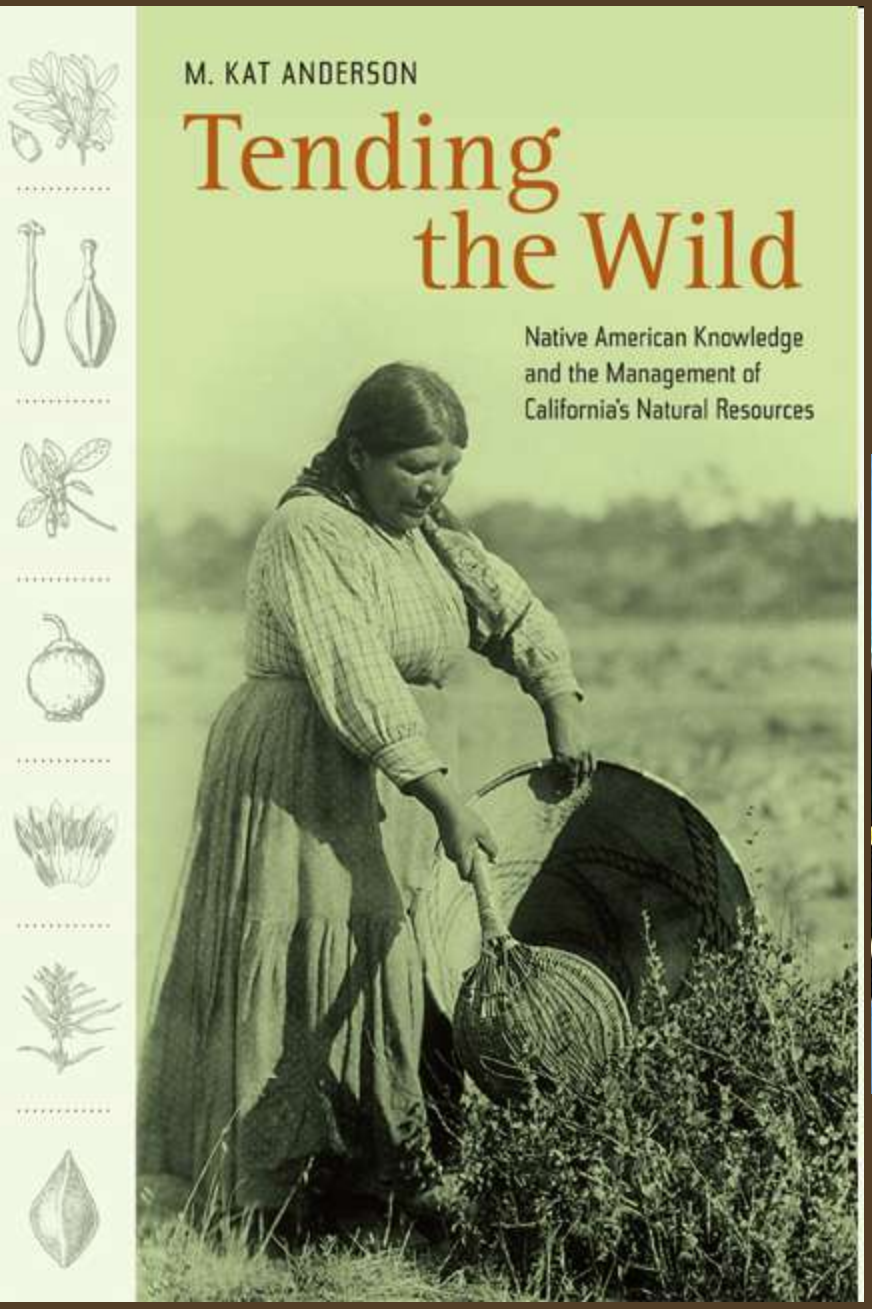

M. KAT ANDERSON
Tending the Wild
Native American Knowledge and the Management of California's Natural Resources

TABLE 9.1

Comparison of numbers of useful shoots from unmanaged versus managed shrubs used for Western Mono basketry[a] (adapted from Anderson 1993b).

Basket Type	Plant Species Used	Shoots per Basket	Unmanaged Plants per Basket	Managed Plants per Basket
Burden	*Ceanothus cuneatus*	2	10 shrubs	1 shrub
	Rhus trilobata	1,200 (1.2 m each)	400 patches	12 patches
	Cercis occidentalis	25 (1.8 m each)	50 shrubs	1 shrub
Full-sized cradleboard	*Rhus trilobata*	675	102 patches	6 patches
	Cercis occidentalis	75 (1.8 m each)	150 shrubs	6 shrubs
	Ceanothus cuneatus	13	65 shrubs	1 shrub
Twined seed beater	*Ceanothus cuneatus*	2 (for rim)	10 shrubs	1 shrub
	Ceanothus cuneatus	188 (for warp and weft)	376 shrubs	15 shrubs
Seed gathering	*Ceanothus cuneatus*	2 (for rim)	10 shrubs	1 shrub
	Ceanothus cuneatus	376 (for warp and weft)	752 shrubs	31 shrubs
	Cercis occidentalis	50	100 shrubs	4 shrubs
Twined sifter	*Rhus trilobata*	1,000 (1.1 m each)	333 patches	10 patches
	Cercis occidentalis	25 (1.8 m each)	50 shrubs	2 shrubs

[a]Based on discussions with Norma Turner (Western Mono weaver). Management methods are pruning and burning.

TABLE 9.2

Quantities of cordage material (*Apocynum* and *Asclepias* spp.) gathered for various cultural items by Native Americans of the Sierra Nevada (adapted from Lindstrom 1992; Anderson 1993a).

Tribe	Cultural Item	Use	Dimensions	Total Cordage Length	Stalks Gathered (Number)
Washoe and Northern Paiute	Gill net	Fishing	1.6 mm 2-ply 30 m x 1.4 m x 38 mm mesh (1/16" 2-ply 100' x 4.5' x 1.5" mesh)	3,665 m (12,022 ft)	60,110
Washoe and Northern Paiute	Bag net	Fishing	1.6 mm 2-ply 0.75 m x 0.75 m x 0.75 m x 25 mm mesh (1/16" 2-ply 2.5' x 2.5' x 2.5' x 1" mesh)	270 m (885 ft)	4,425
Washoe and Northern Paiute	A-frame dip/lift net	Fishing	1.6 mm 2-ply 2.1 m sq. x 1.2 m (x 4 panels) x 25 mm mesh (1/16" 2-ply 7' sq. x 4' [x4 panels] x 1" mesh)	2,405 m (7,890 ft)	39,450
Sierra Miwok	Feather cape	Ceremony	1.6 mm 2-ply 44.5 mm mesh (1/16" 2-ply 1.75" mesh)	30 m (100 ft)	500
Sierra Miwok	Deer net	Hunting	3.2 mm 2-ply 12.2 m x 1.8 m x 102 mm mesh (1/8" 2-ply 40' x 6' x 4" mesh)	2,134 m (7,000 ft)	35,000

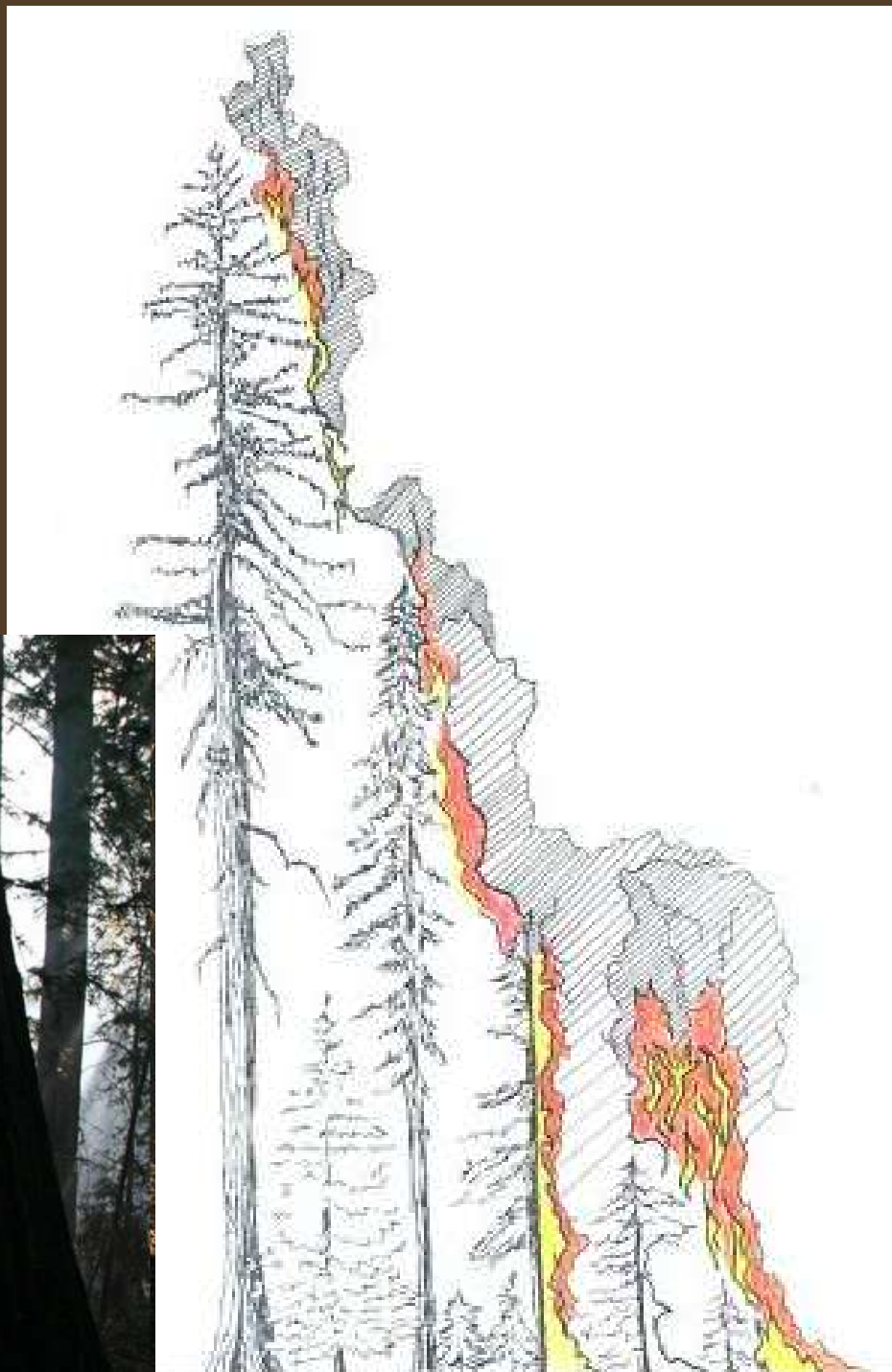
150 years to present

1890

1943

1946, Yosemite Firefighters

“Ladder Fuels”



1946, Yosemite
Prescribed Fire

Stephen J. Pyne
The Conscience of Human Relationships with Fire

Courses

Books

Latest edition:

Voice and Vision: A Guide to Writing History and Other Serious Nonfiction [link]

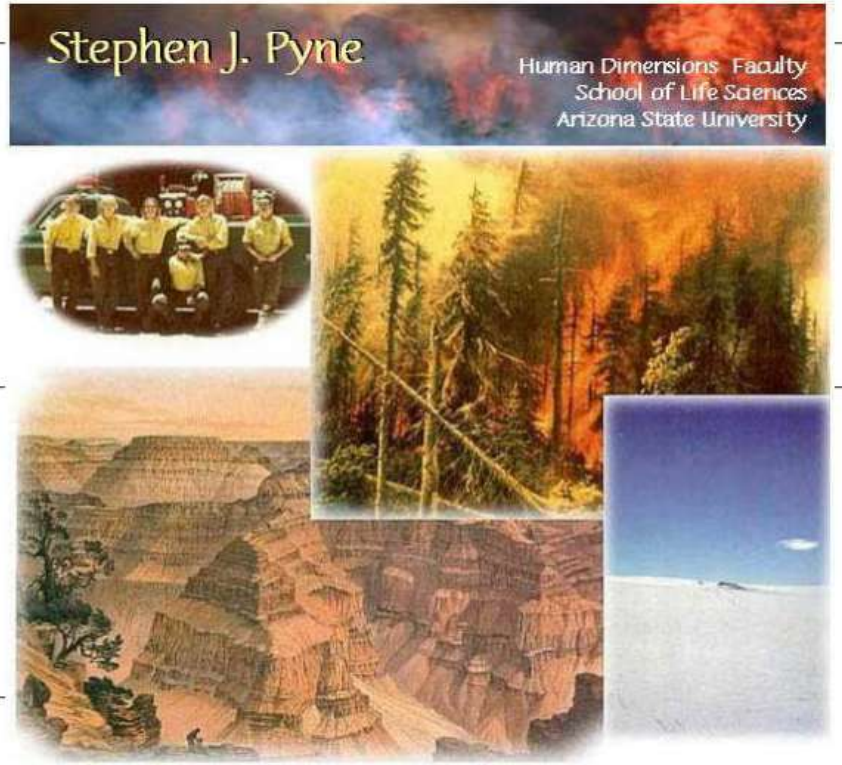
Recent Essays

Commentaries... *Pyne on fire, and other matters*

New postings

Riding the Melt - writing the writing with no name [pdf]
Making History from Fighting Fire - an intellectual autobiography [pdf]
Black Saturday: The Sequel - invited op/ed on recent Australian fires [pdf]
Untamed Art - story of the world's most famous forest fire painting [pdf]

Biographical information Contact



How do we know if we are correctly managing disturbance?

Where’s ‘Goldilocks?’

Can Plants Tell Us about Disturbance?

Complications with Managing for Disturbance

Can logging mimic natural disturbance regimes?

How do we best manage fires?

Invasive Plant Inventory

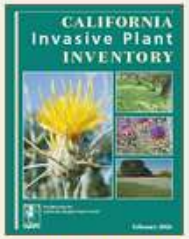
Home
Invasive Plants
Definitions & Impacts
Invasive Plant Inventory
Management
Mapping
Prevention
Research
Symposium
Field Courses
Policy & Advocacy
Responsible Landscaping
Weed Management Areas
Outreach & Education
Publications & Resources
About Us

Quick Links

Go directly to interactive Inventory database
2006 Inventory (pdf)
2007 Inventory update (pdf)
Printable version of this page
Submit information for Inventory revisions

Jump to section below:

The California Invasive Plant Inventory categorizes non-native invasive plants that threaten the state's wildlands. Categorization is based on an assessment of the ecological impacts of each plant. The Inventory represents the best available knowledge of invasive plant experts in the state. However, it has no regulatory authority, and should be used with full understanding of the limitations described below.



Download 2006 Inventory (pdf)

California is home to 4,200 native plant species, and is recognized internationally as a "biodiversity hotspot." Approximately 1,800 non-native plants also grow in the wild in the state. A small number of these, approximately 200, are the ones that this Inventory considers invasive. Improved understanding of their impacts will help those working to protect California's treasured biodiversity.

[top of page]

Environmental Education

What's this?

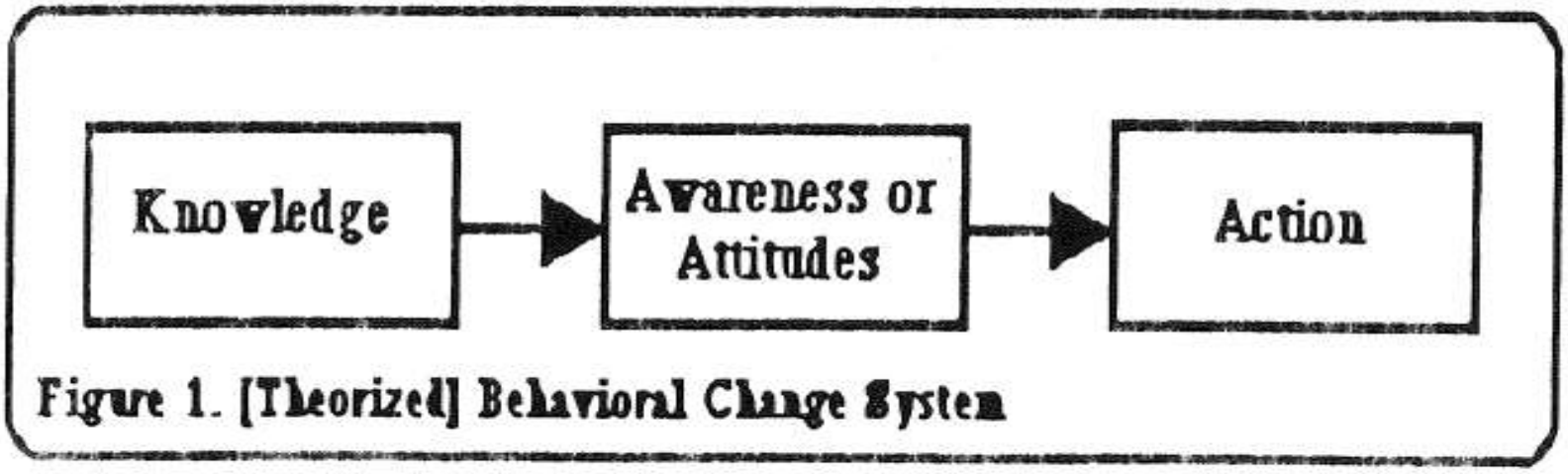


Figure 1. [Theorized] Behavioral Change System

What's this?

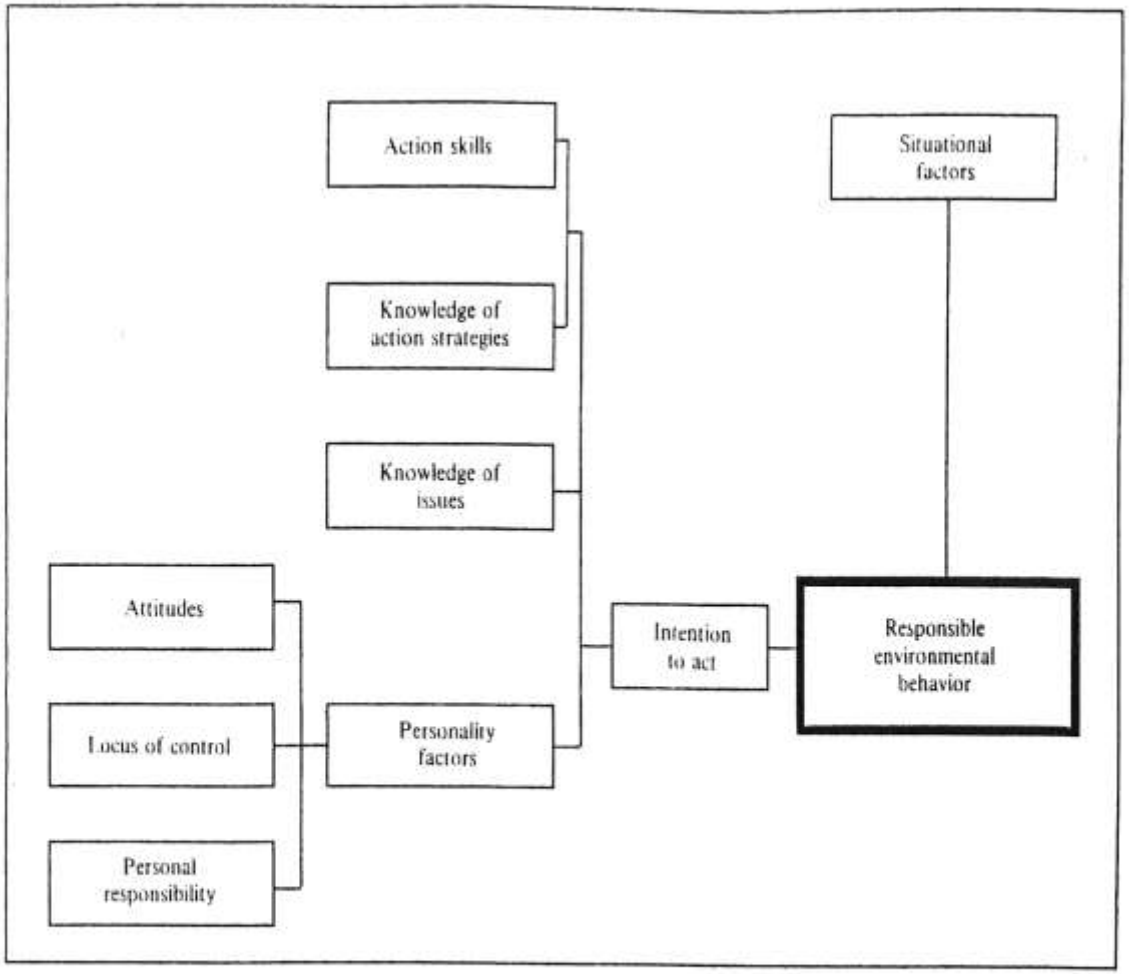


Figure 2. The Hines Model of Responsible Environmental Behavior
(Adapted from Hines et. al. (1986/87

What's this?

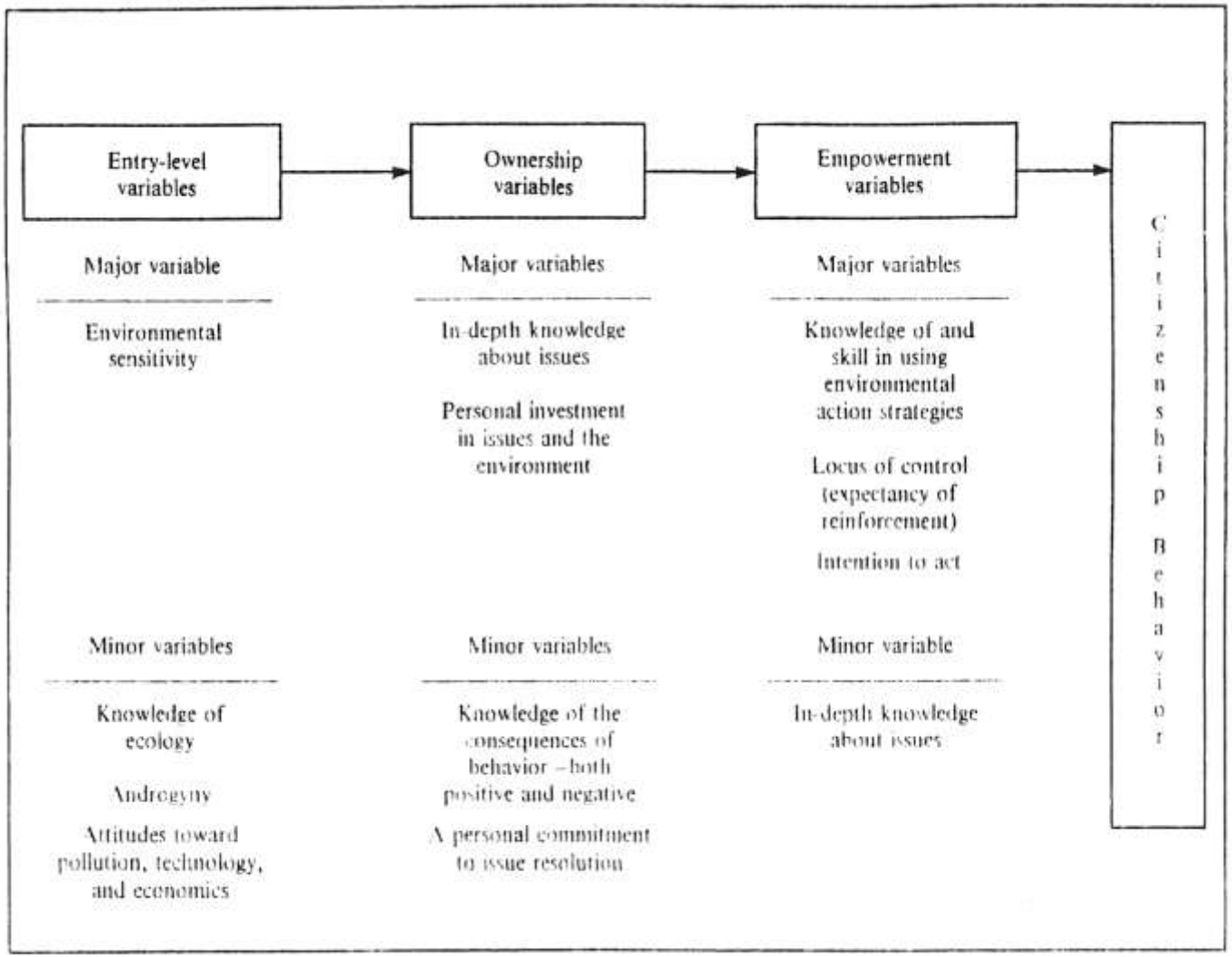


Figure 3. Environmental Behavior Model: Major and Minor Variables Involved in Environmentally Responsible Behavior.

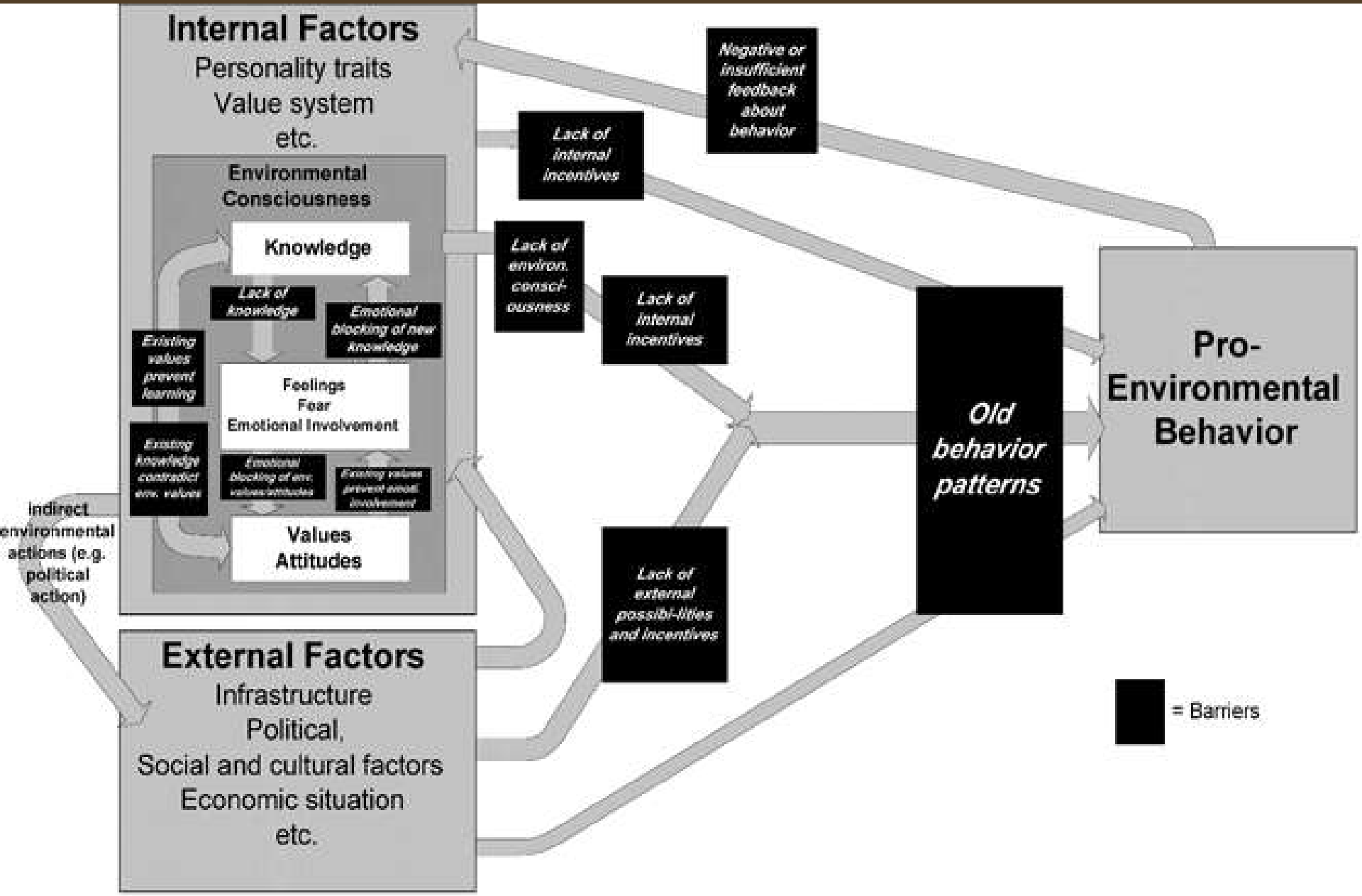

Internal Factors
Personality traits
Value system
etc.
Environmental Consciousness
Knowledge
Lack of knowledge
Emotional blocking of new knowledge
Existing values prevent learning
Feelings
Fear
Emotional Involvement
Existing knowledge contradict env. values
Emotional blocking of env. values/attitudes
Existing values prevent emoti. involvement
Values
Attitudes
indirect environmental actions (e.g. political action)
External Factors
Infrastructure
Political,
Social and cultural factors
Economic situation
etc.
Negative or insufficient feedback about behavior
Lack of internal incentives
Lack of environ. consci-ousness
Lack of internal incentives
Lack of external possibi-lities and incentives
Old behavior patterns
Pro-Environmental Behavior
= Barriers

TABLE 1. Critical Education Components

It appears that we can maximize opportunities to *change learner behavior* in the environmental dimension if educational agencies will:

1. teach environmentally significant ecological concepts and the environmental interrelationships that exist within and between these concepts;
2. provide carefully designed and in-depth opportunities for learners to achieve some level of environmental sensitivity that will promote a desire to behave in appropriate ways;
3. provide a curriculum that will result in an in-depth knowledge of issues;
4. provide a curriculum that will teach learners the skills of issue analysis and investigation as well as provide the time needed for the application of these skills;
5. provide a curriculum that will teach learners the citizenship skills needed for issue remediation as well as the time needed for the application of these skills; and
6. provide an instructional setting that increases learners' expectancy of reinforcement for acting in responsible ways, i.e., attempt to develop an internal locus of control in learners.

Preparing for Friday…

Details

- Meet at 1:30 p.m.
- Read the reading!!
  - Monterey Bay National Marine Sanctuary Exploration Center Education and Outreach Plan (NOAA 2012). Focus especially on pp. 1-4; 23-25, and; 87-93.
  - An interpretive approach to developing volunteer-based coastal monitoring programmes. (Cuthill 2000).
  - Multiple modes of meaning-making in a science center. (Rahm 2004).
- Prepare 1 notecard for Lisa Uttal
- Be prepared for weather, short walk to beach.