# Dynamic Conservation in a Changing World

# Goals for Uncommon Dialogue

1. Build shared understanding of dynamic conservation, including importance and elements.

2. Identify policy/legal/perceptual obstacles to implementation

3. Develop strategy to advance concept
   - What actions can be taken right away?
   - What needs more exploration and research going forward?
   - Determine what can be addressed through policy? What cannot? What other mechanisms exist?
   - Opportunities and obstacles to mainstreaming?

# Specific problem solving challenge

**Hypothesis**

- Current policy creates greatest friction to experimentation
- Resistance from institutional cultures accustomed to familiar administrative policies and perceived constraints

**Thus, focus is on identifying**

- Steps to create a new framework of policies, institutions and expertise.
- Strategies to socialize and encourage adoption among agencies and policymakers.

**Science is critical element, however**

- Core scientific challenge is measuring success for conservation, old and new. We should be careful not to get hung up on the science of measuring success for Dynamic Conservation.

# Working definition

Dynamic Conservation recognizes that change is inherent to ecological and social systems and integrates the dynamic nature of these systems into conservation strategies and outcomes

Dynamic Conservation uses temporally and spatially dynamic strategies to adaptively meet conservation outcomes through time

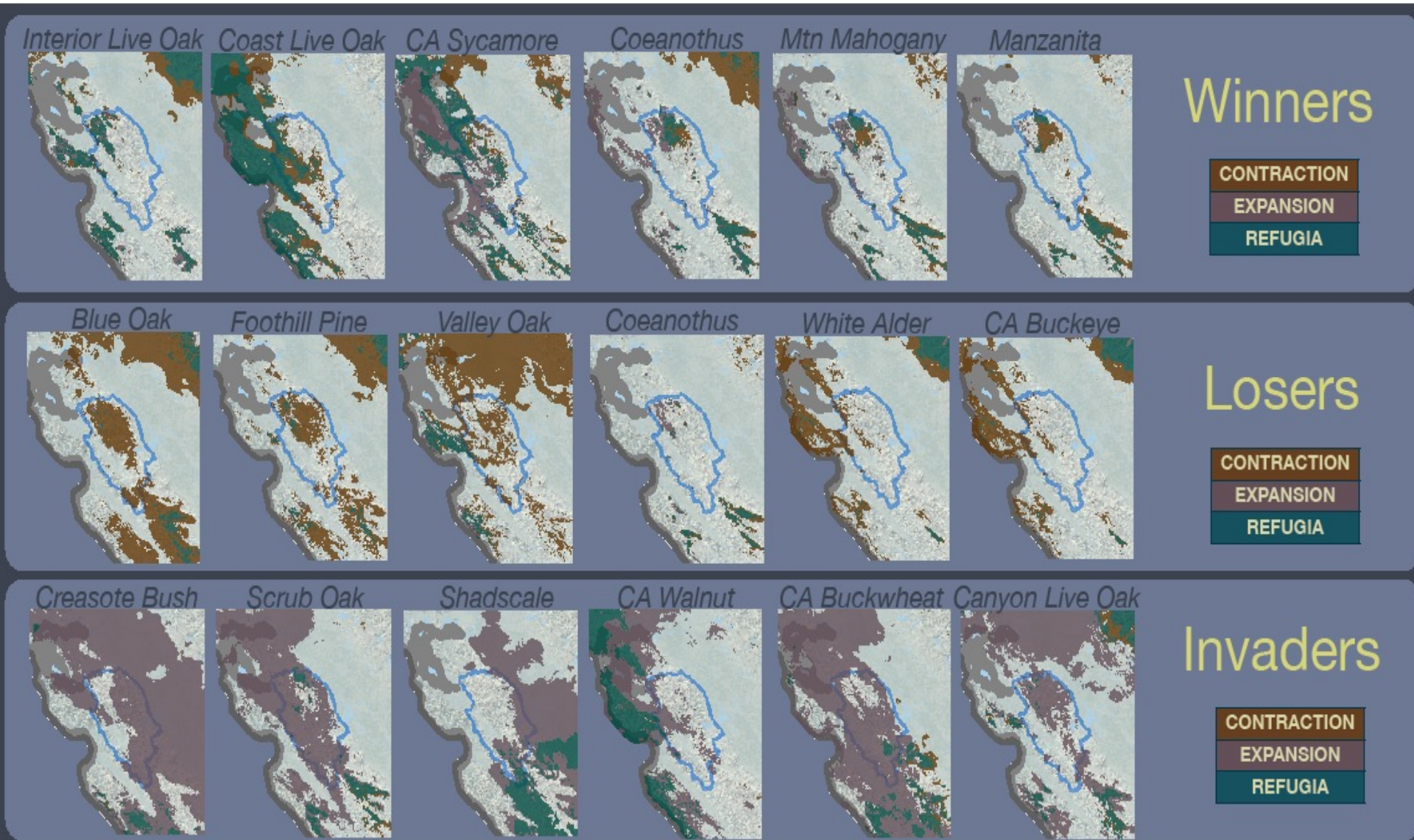
Examples include

- Seasonal wetlands to support migratory birds over time and improve conservation outcomes
- Using SST and other satellite data to determine tuna catch limits in open seas in real time
- Habitat needs are met through annual contracts with landowners

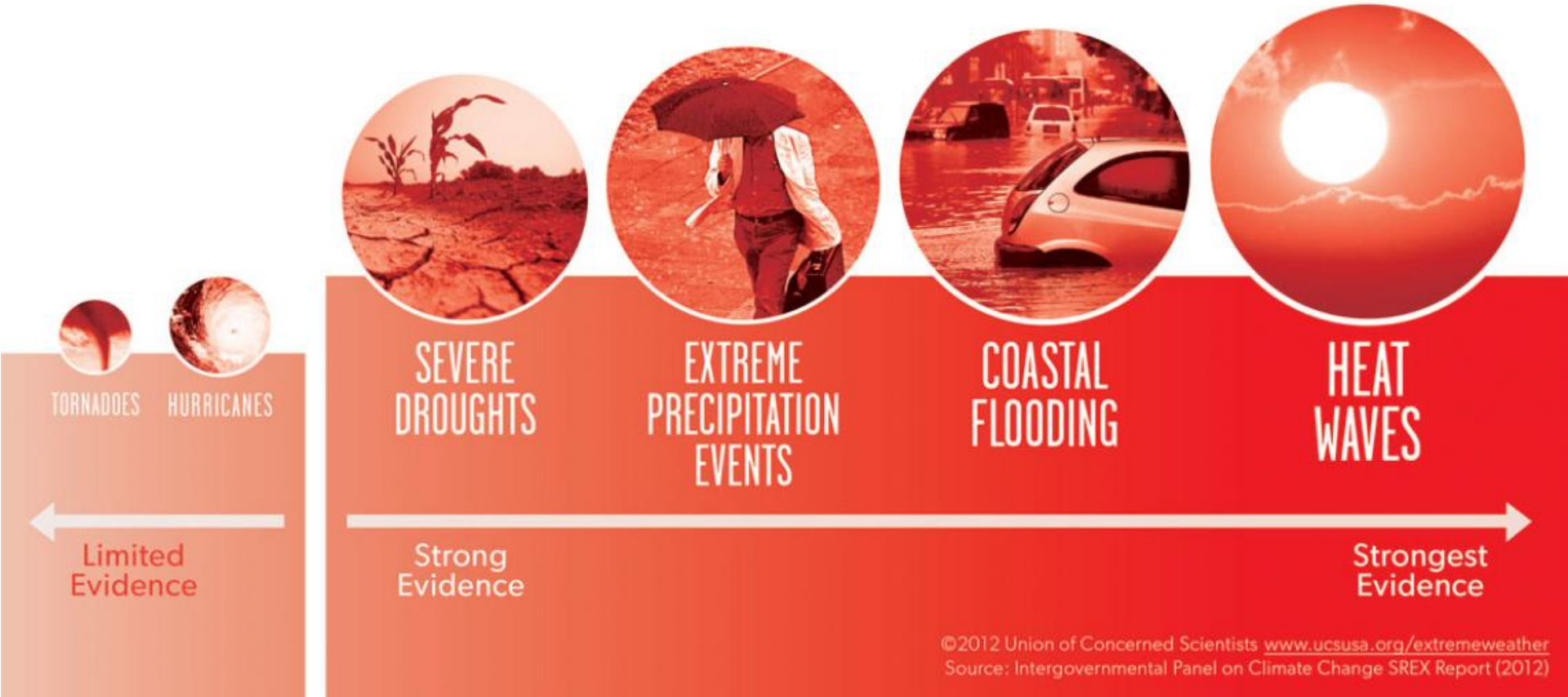
# framing of dynamic conservation

***Rebecca Shaw, WWF***

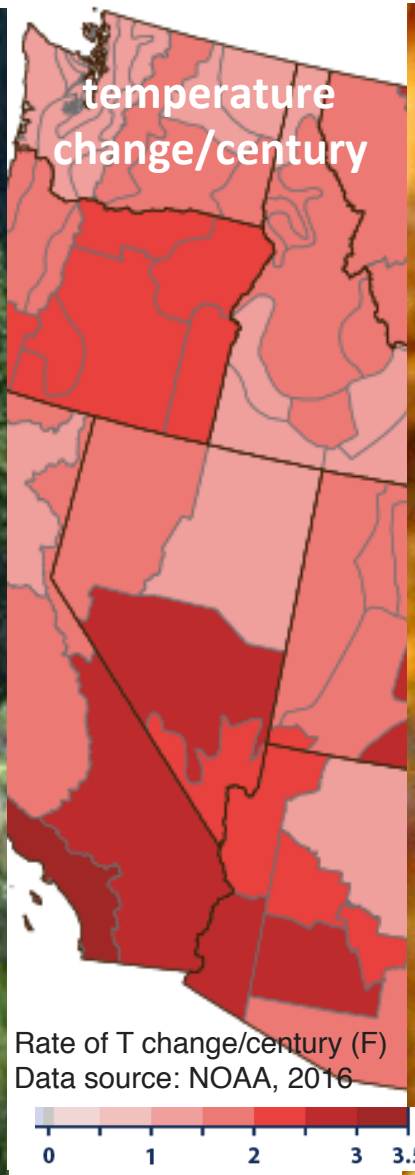
# incremental climate change



# punctuated climate change

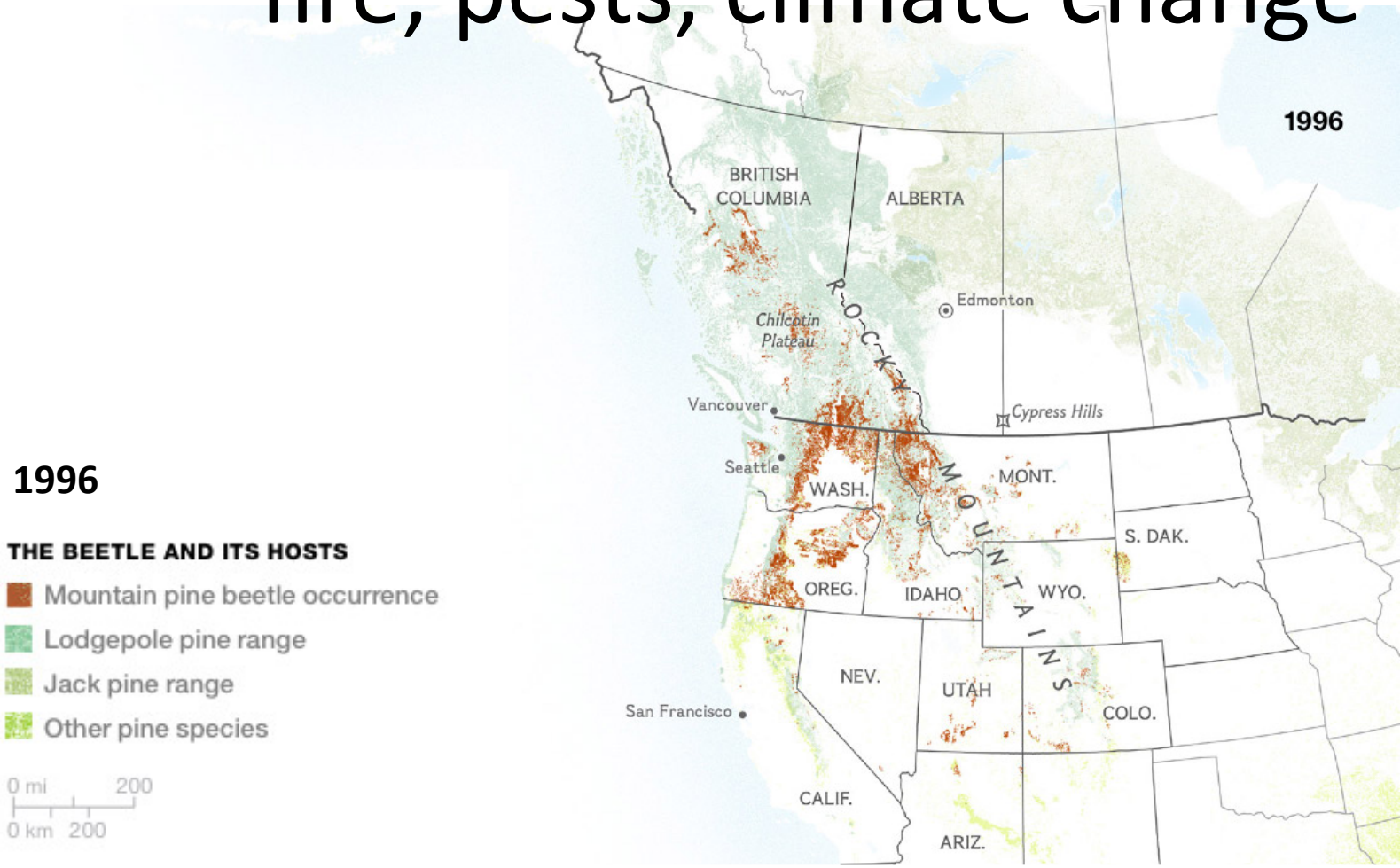


# incremental and punctuated dynamics




# fire, pests, climate change




http://ngm.nationalgeographic.com/2015/04/pine-beetles/epidemic-map

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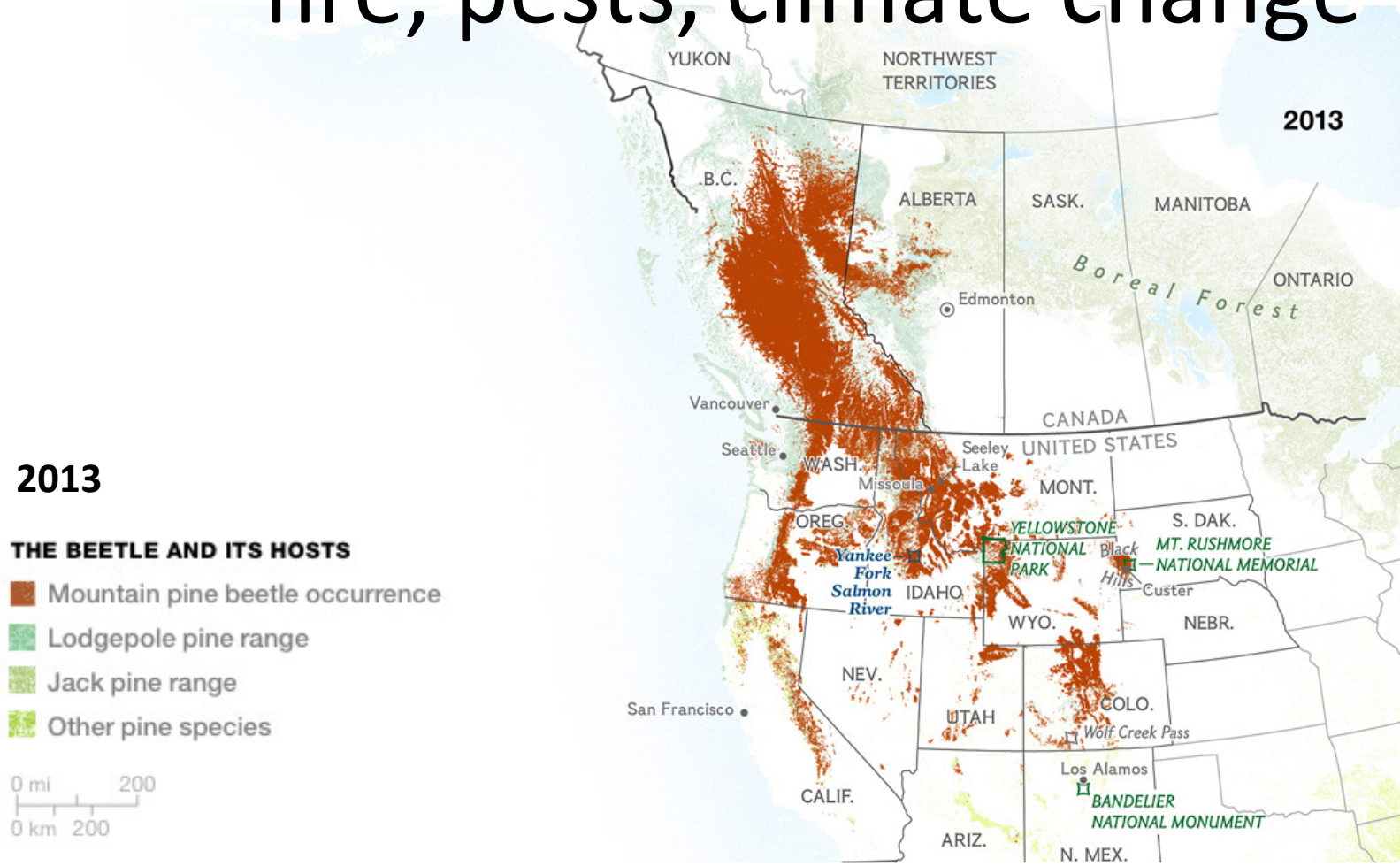


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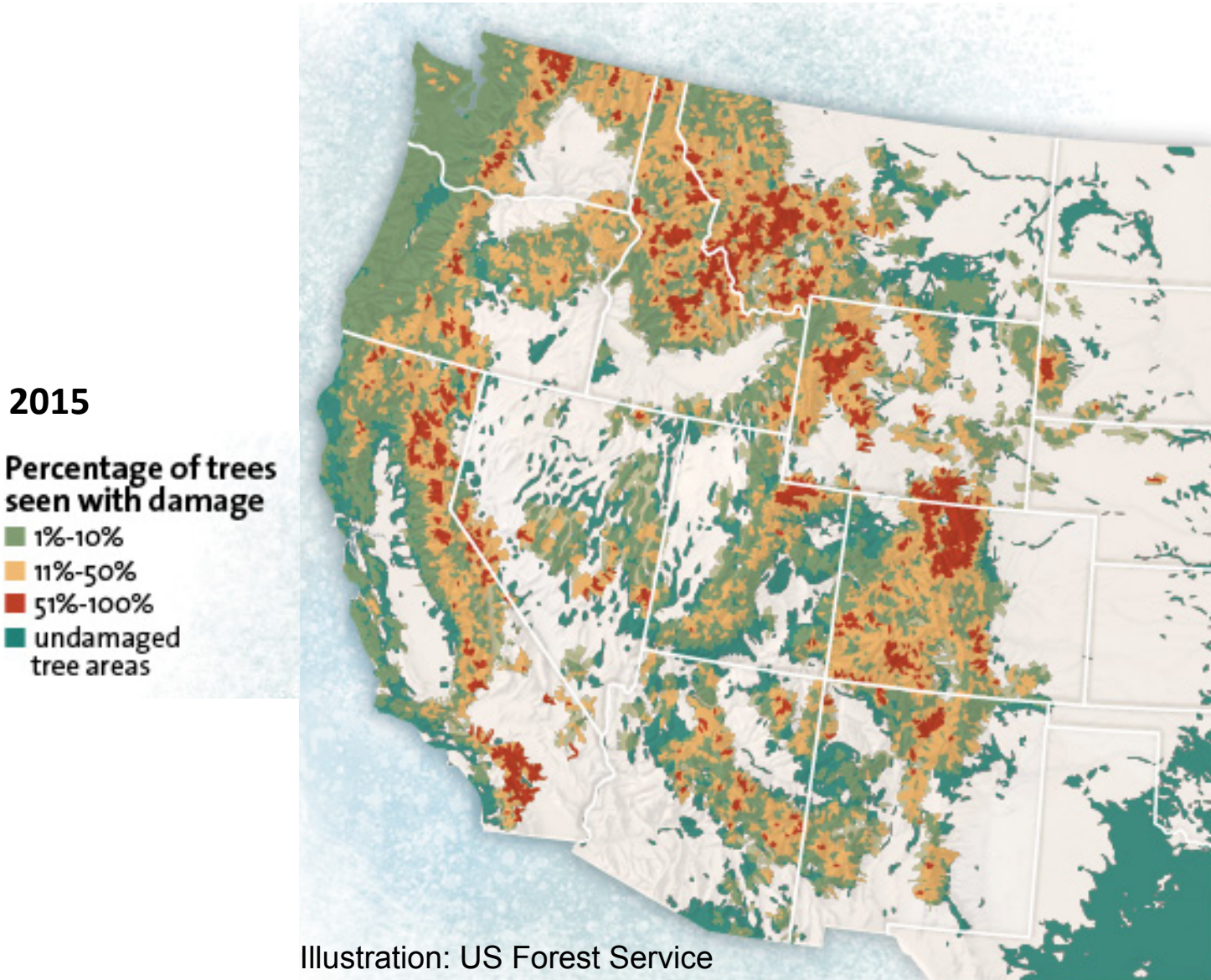


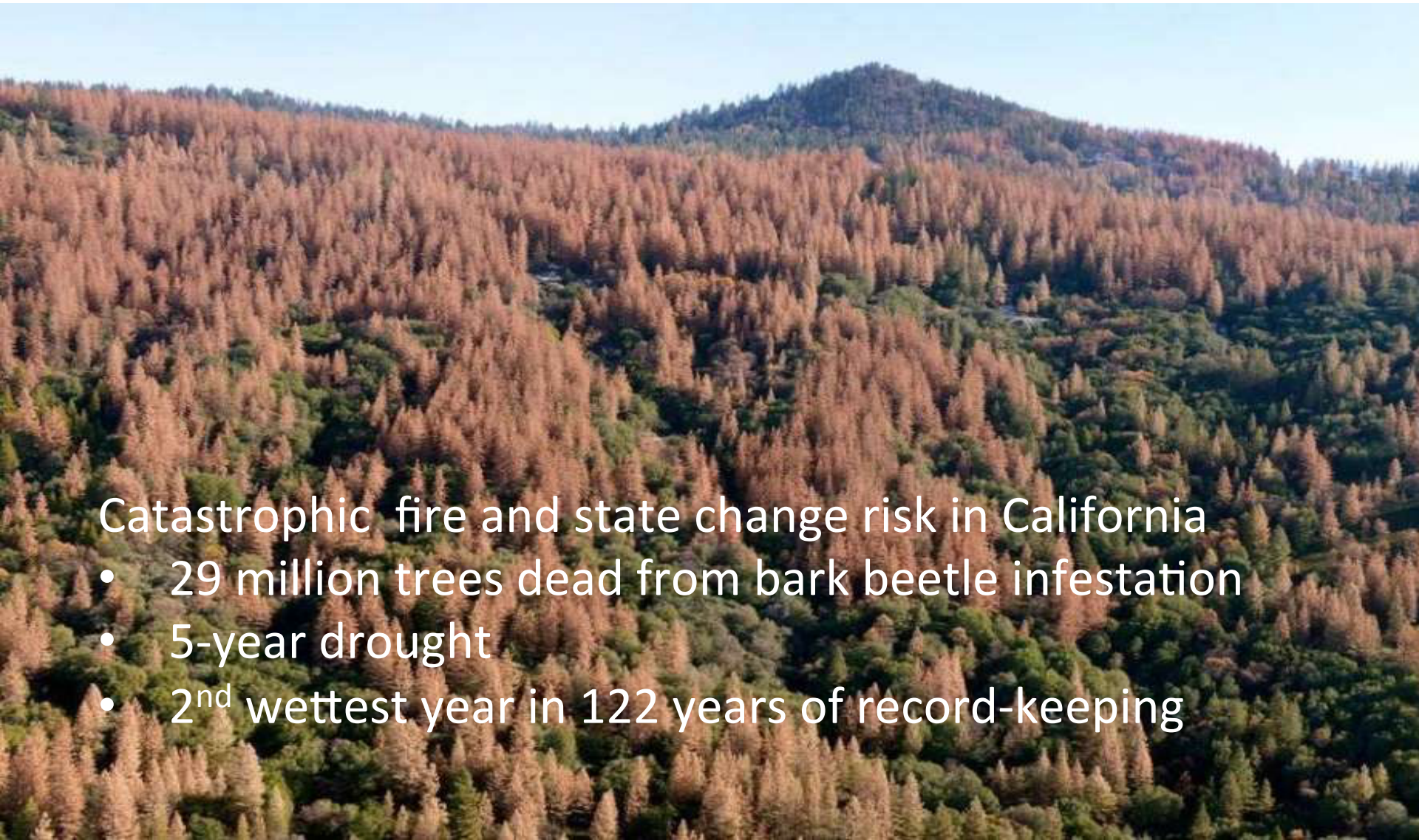

Illustration: US Forest Service

# social dynamics

- Fire suppression
- Limited selective timber harvest

Illustration: Bill Mayer, Mother Jones 2015

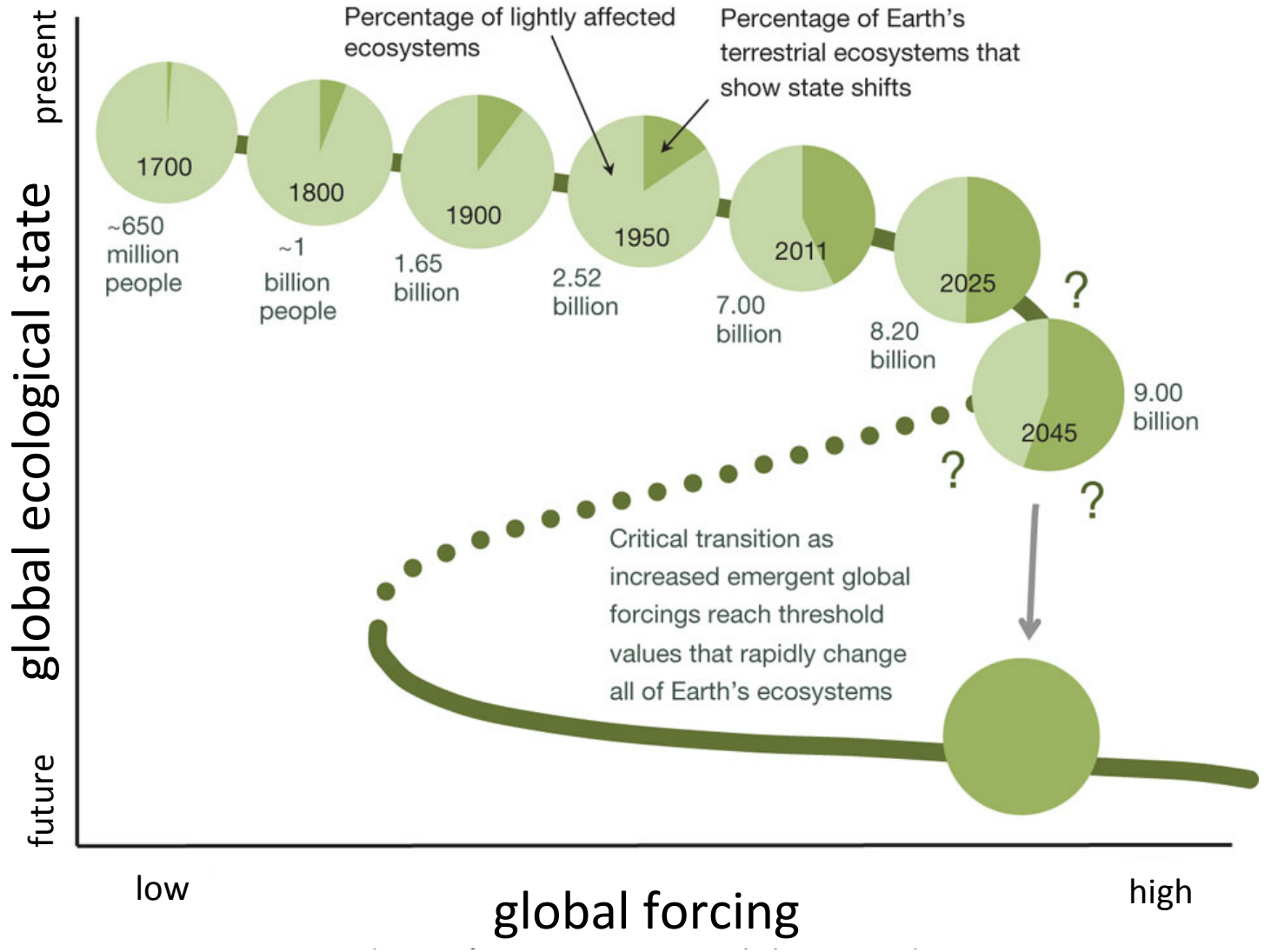
# conservation context



Catastrophic fire and state change risk in California

- 29 million trees dead from bark beetle infestation
- 5-year drought
- 2nd wettest year in 122 years of record-keeping

# ecosystem transition



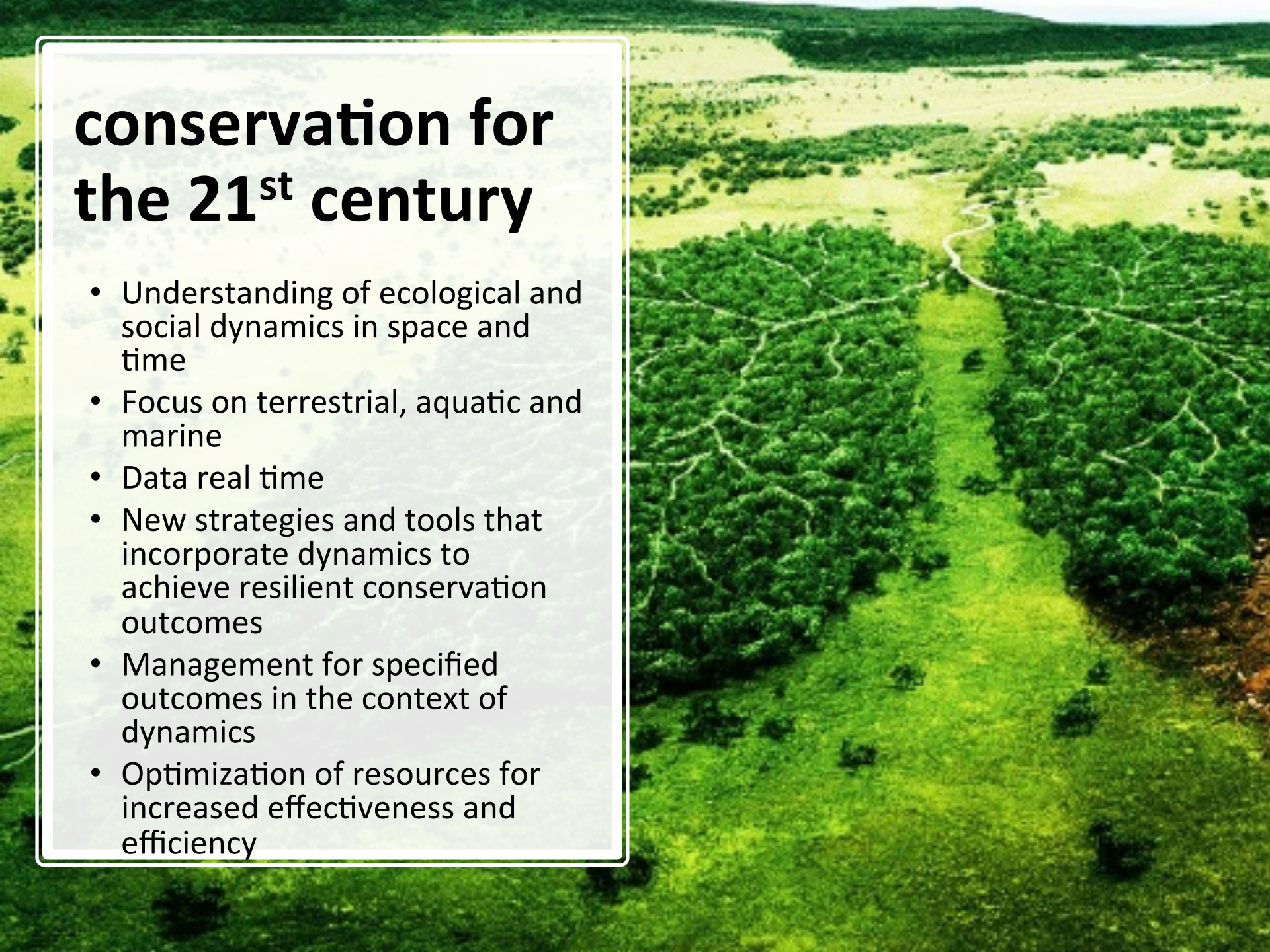

A D. Barnosky *et al. Nature* **486**, 52–58 (2012) doi:10.1038/nature11018

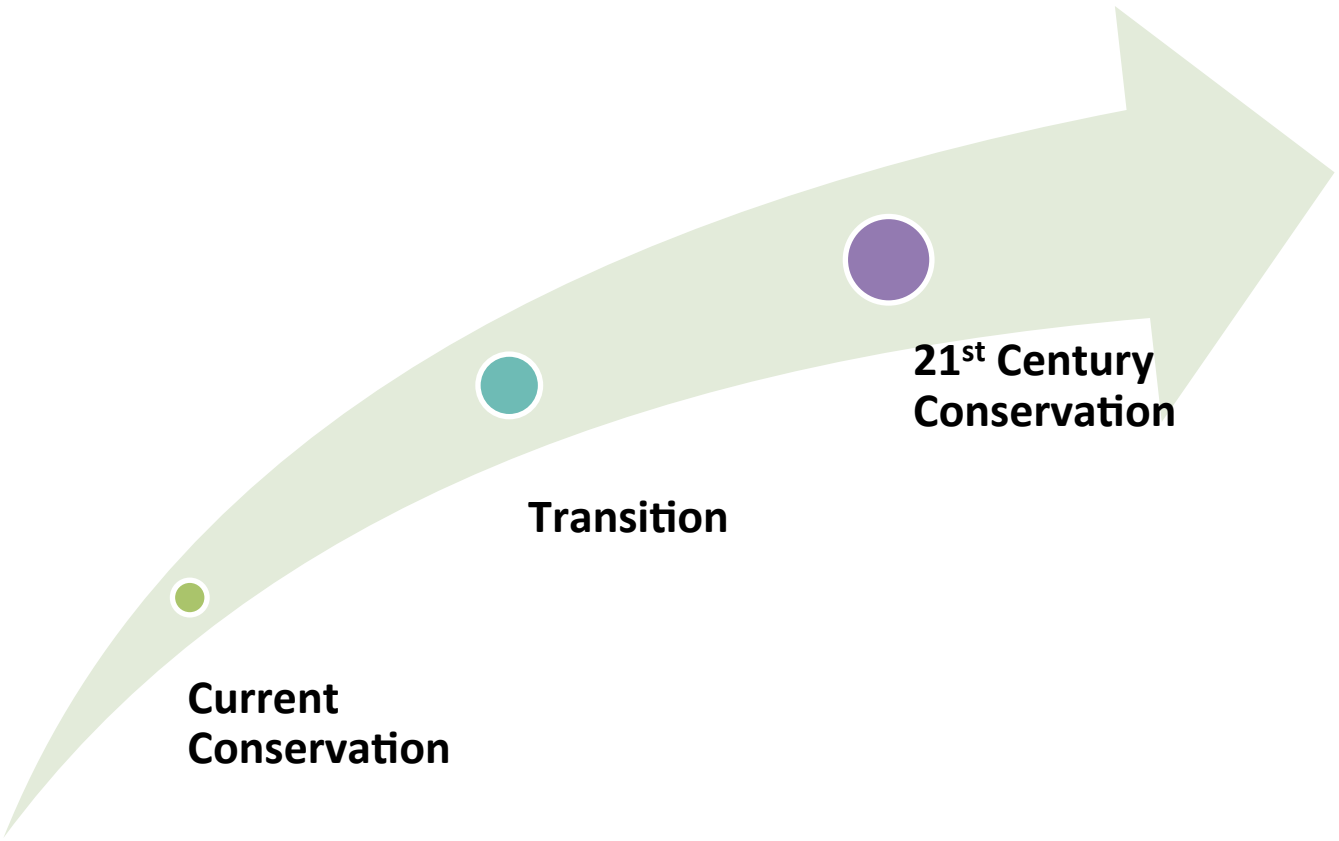
# current conservation

- Planning and strategy assume stasis in space and time
- Dynamic systems poorly conserved
- Data to support planning and strategies is static
- Attempts to address system dynamics often rely on existing static strategies and tools for implementation
- Statutes are interpreted and implemented assuming stasis in space and time
- Social dynamics of conservation are neglected or interpreted as a 'threat'
- Institutions are challenged to adapt given existing conservation mindsets, strategies, tools and resources

# conservation for the 21st century

- Understanding of ecological and social dynamics in space and time
- Focus on terrestrial, aquatic and marine
- Data real time
- New strategies and tools that incorporate dynamics to achieve resilient conservation outcomes
- Management for specified outcomes in the context of dynamics
- Optimization of resources for increased effectiveness and efficiency






What do we need to successfully transition to achieve conservation outcomes in the future?

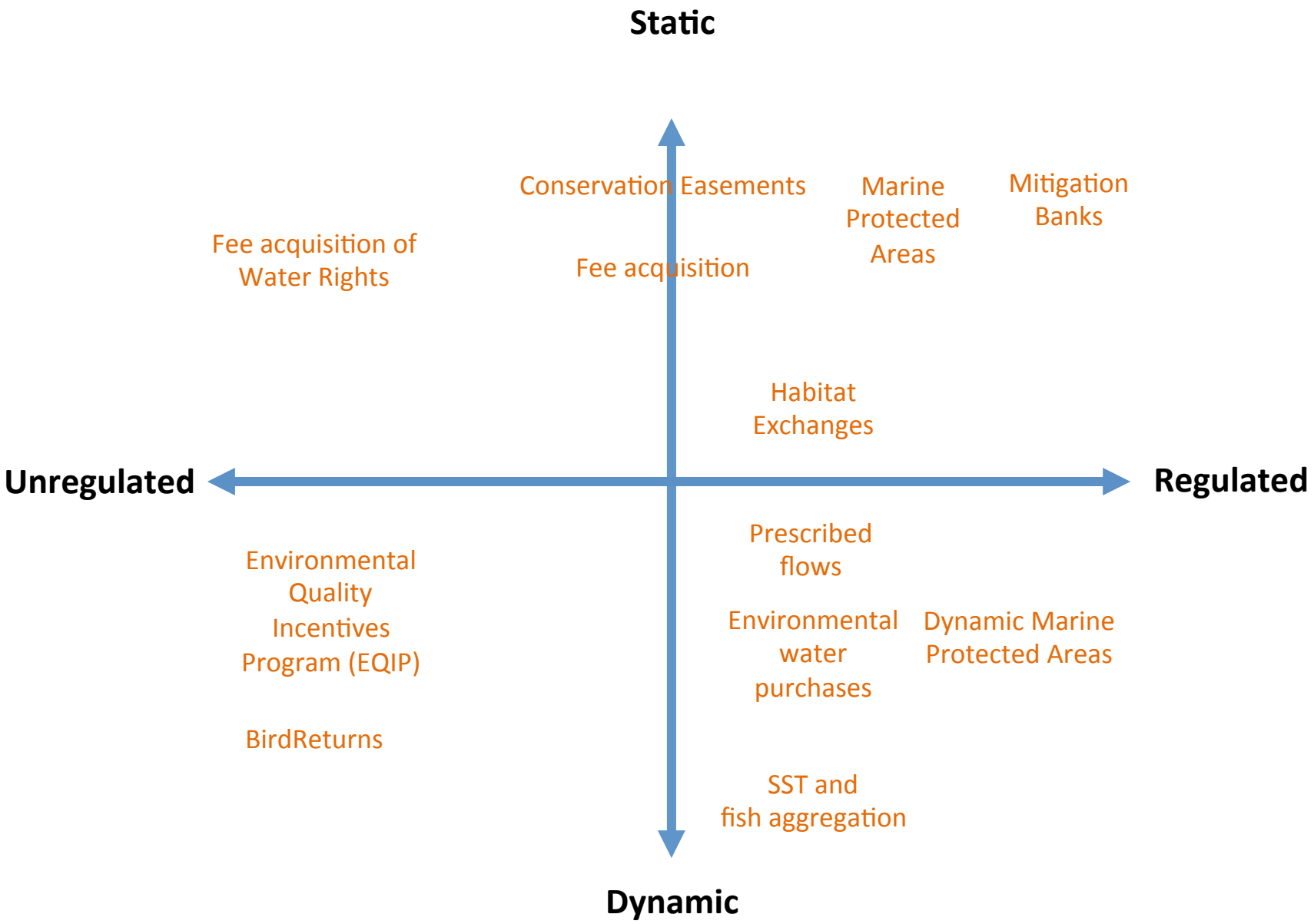
# dynamic conservation

**Conservation that considers change**

- Recognizes change inherent to ecological and social systems, integrates dynamic nature into conservation approaches
- Shifts across ecological and social systems, as appropriate

**Conservation that is temporally and spatially flexible**

- Management practices adjust in time and space
- Strategies cut across scales
  - Short-term interventions (e.g. instantaneous, seasonal) to long-term (e.g., permanent protections managed adaptively)
  - Location of outcomes can shift in time and space
  - Across relevant spatial scales


Static
Conservation Easements
Marine Protected Areas
Mitigation Banks
Fee acquisition of Water Rights
Fee acquisition
Habitat Exchanges
Unregulated
Regulated
Prescribed flows
Environmental Quality Incentives Program (EQIP)
Environmental water purchases
Dynamic Marine Protected Areas
BirdReturns
SST and fish aggregation
Dynamic

# toolbox

- Adapt existing tools
  - e.g. ‘rigid’ easements versus ‘flexible’ easements
  - public-private partnerships
  - market-based approaches
- Leveraging big data
- Financing for outcomes

# value dynamic conservation can deliver

- Meeting shifting needs
- Management across the matrix of land tenure to expand the footprint of conservation practices
- Increase connectivity in fragmented landscapes
- More cost-effective and resilient outcomes with scarce resources

# barriers to dynamic conservation

- Legal
- Financing
- Performance measures and accountability
- System obstacles

# how to advance dynamic conservation

- How does the conservation community experiment?
- How does the new system emerge?
- How to engage wide range of stakeholders to want to build new approaches?

# case studies

1. **BirdReturns**
   – *Marc Reynolds, Nature Conservancy*

2. **Dynamic Marine Reserves**
   – *Larry Crowder, Center for Ocean Solutions*

3. **Habitat Exchange**
   – *Eric Holst, EDF*