



# Forest and Landscape Patterns: Research, Monitoring, Assessment

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Who  
cares  
about  
landscape  
patterns?

- Society and popular science** → headline indicators (forest fragmentation, urban sprawl ...)
- Ecologists** → the pattern–process hypothesis (wildlife habitat, disturbance, water quality ...)
- Resource managers** → goods and services (where to manage what, trade-offs ...)
- Land use planners** → landscape context (recreation opportunity, sense of place ...)
- Epidemiologists** → environmental health (invasive species, host distribution, connectivity ...)
- Assessment scientists** → ecological risk and forecasting (all of the above)

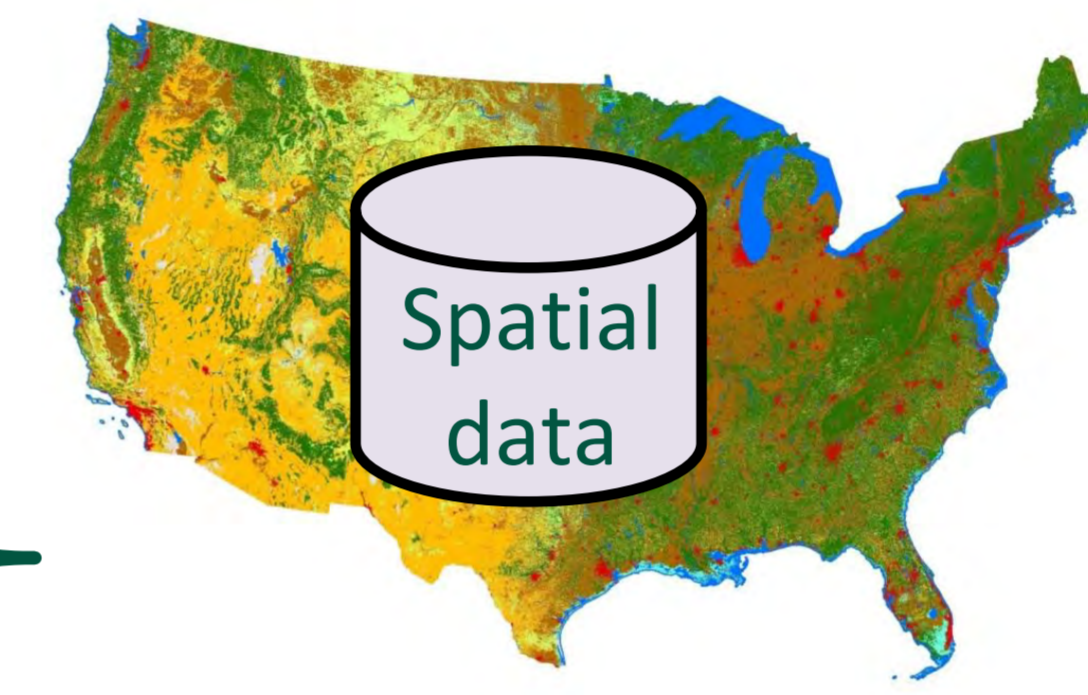
What  
do we  
do?

- Research: Landscape pattern analysis**
  - What to measure, how, why?
- Quantify and map land cover patterns**
  - Which patterns occur where?
  - Over what spatial scales do the patterns exist?
  - How are the patterns changing over time?

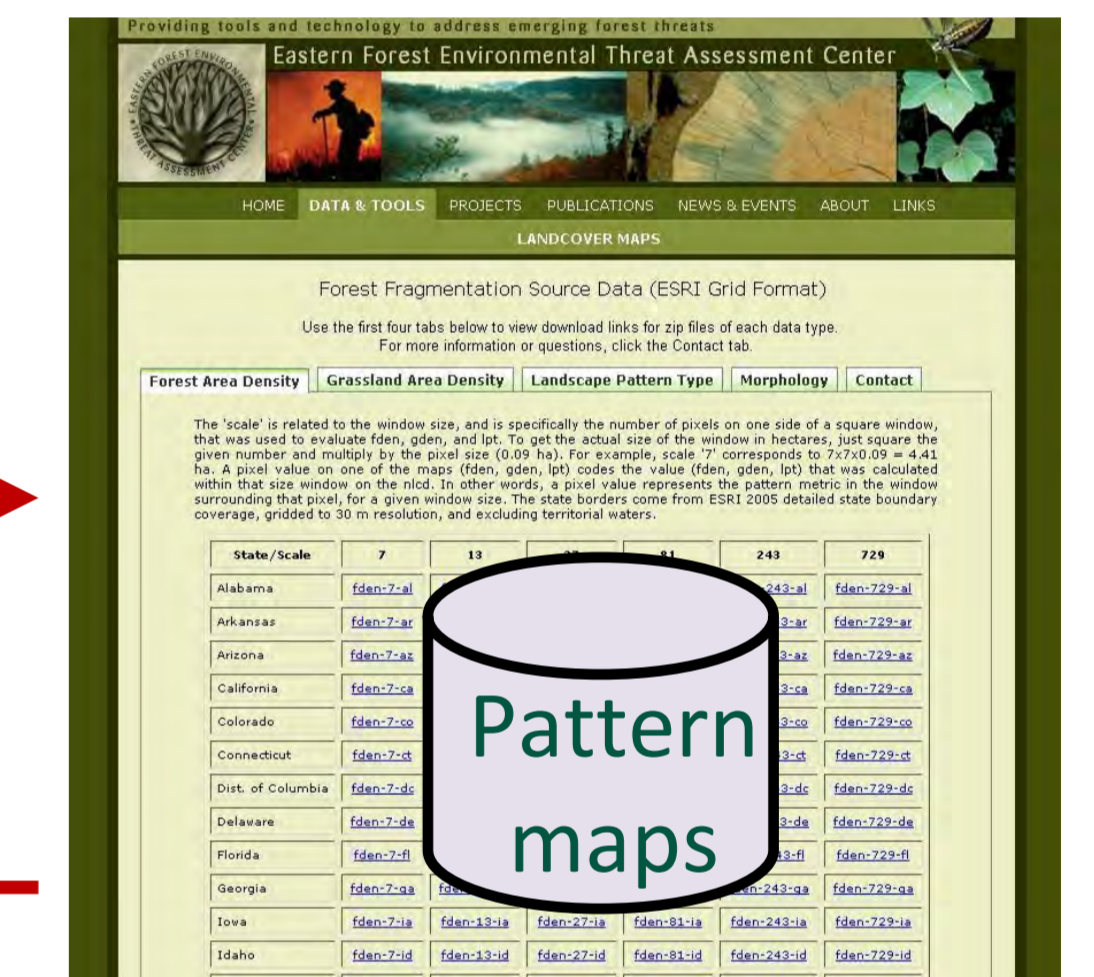
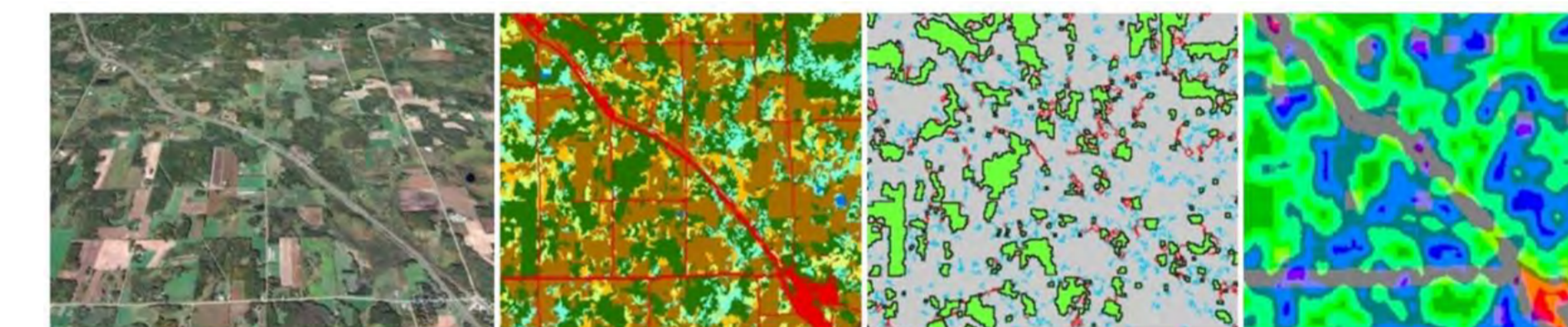


**Monitoring & assessment**

**An interdisciplinary approach supports a variety of applications and enables integration**



Produce maps of  
“pattern primitives”

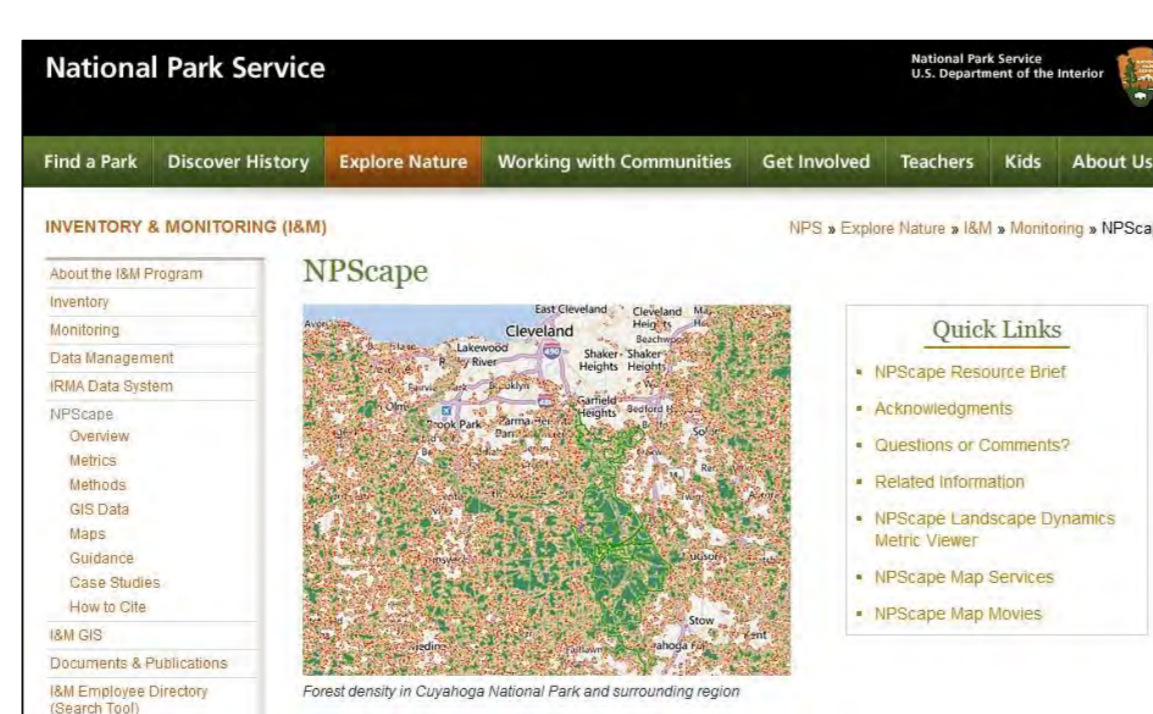
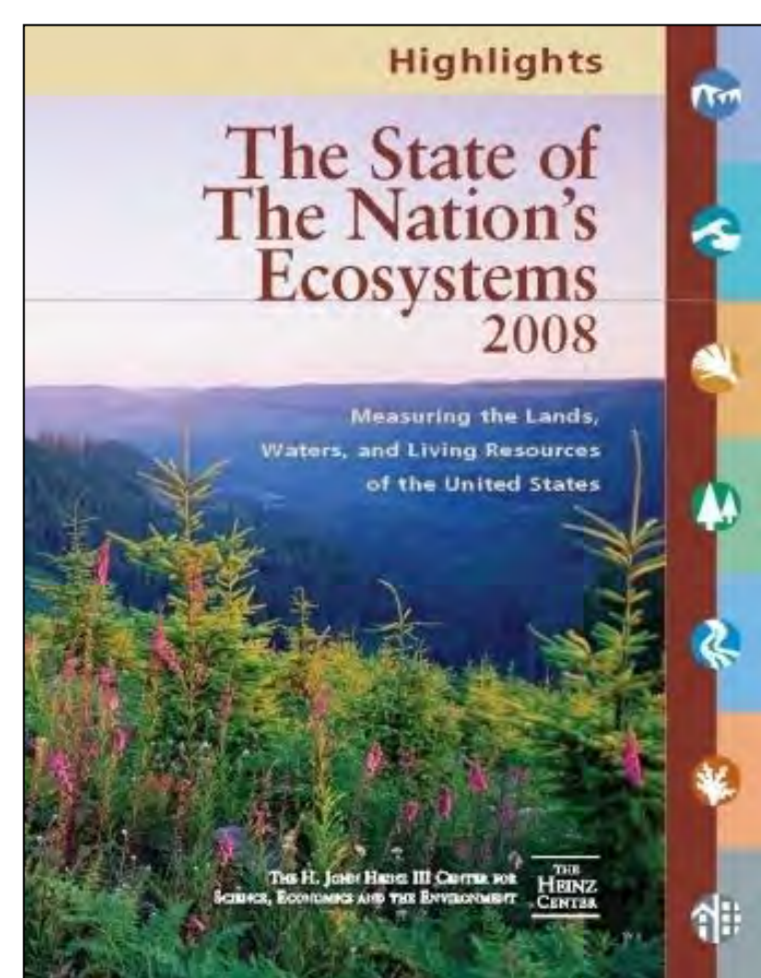
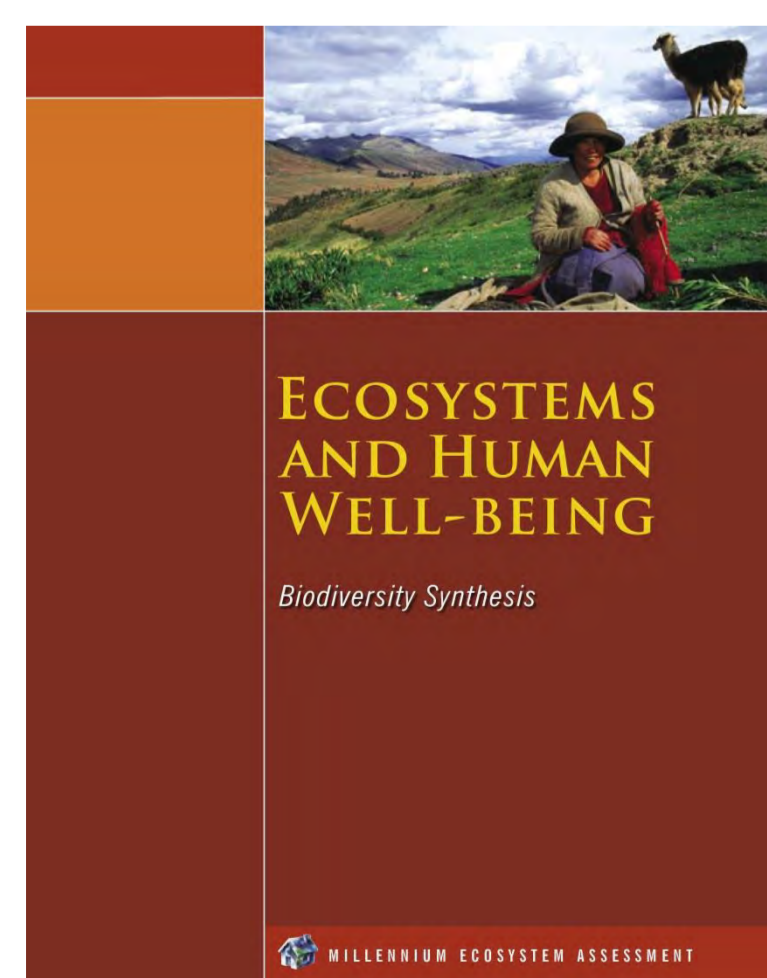
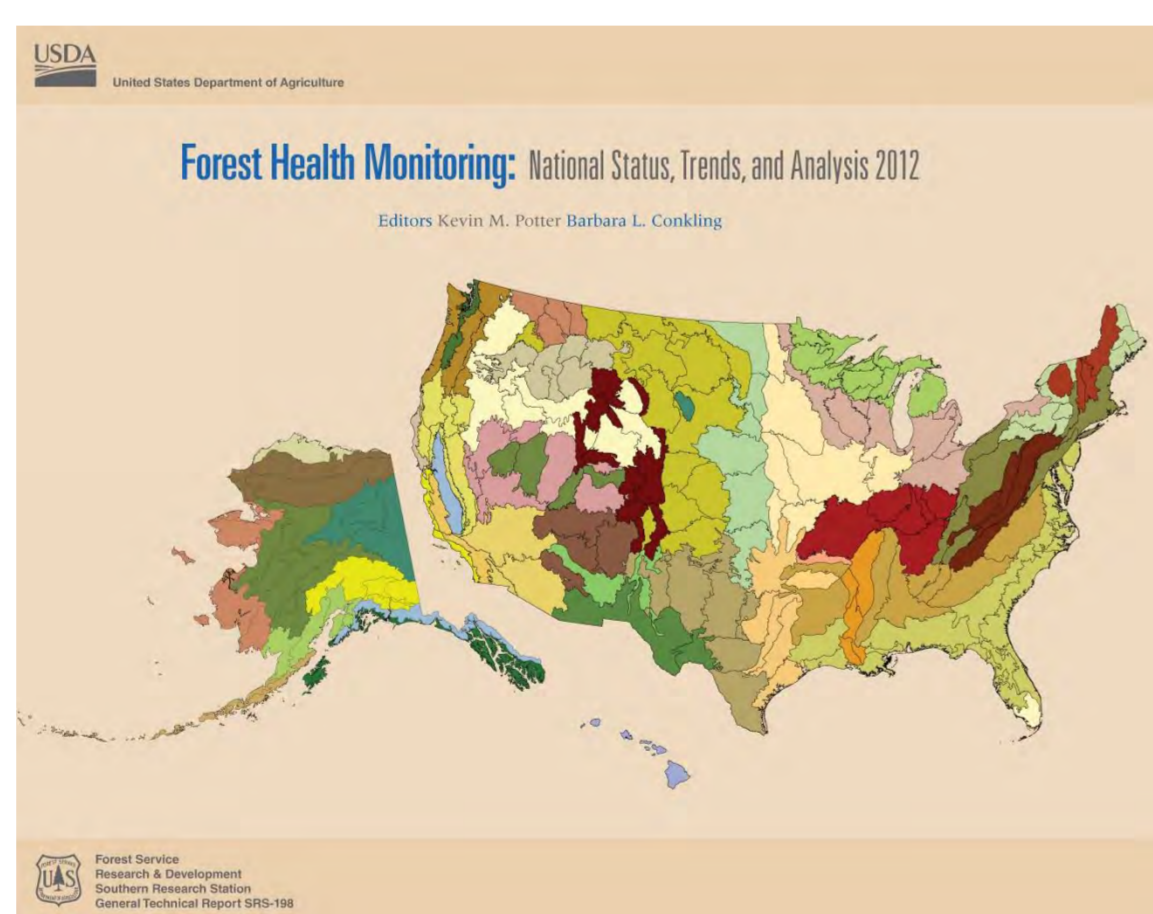
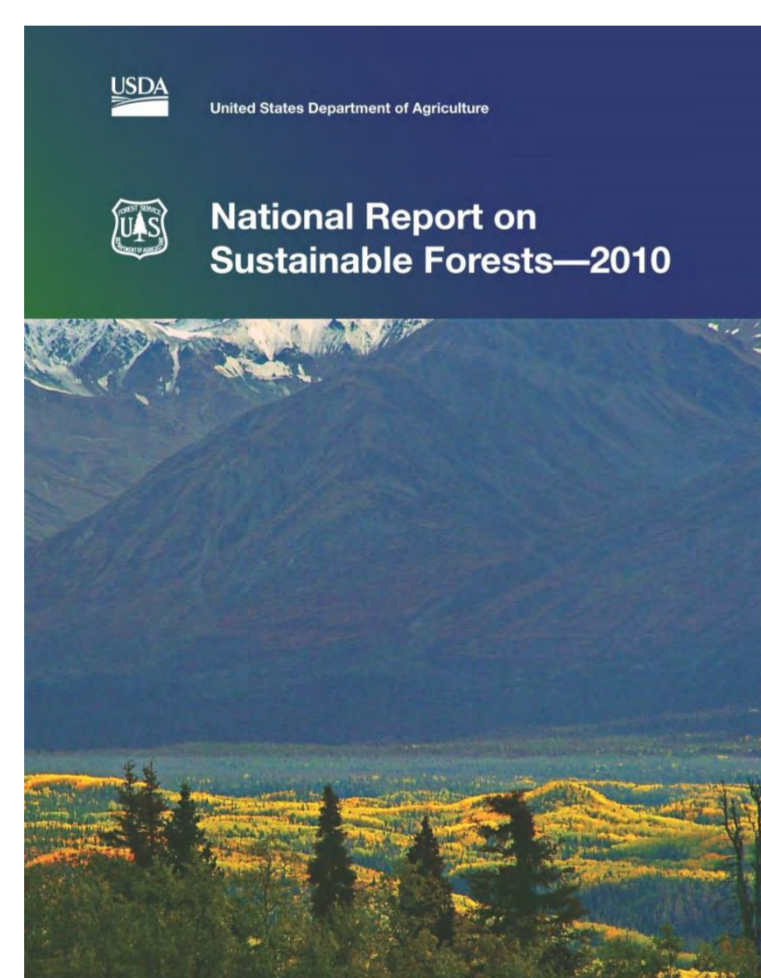
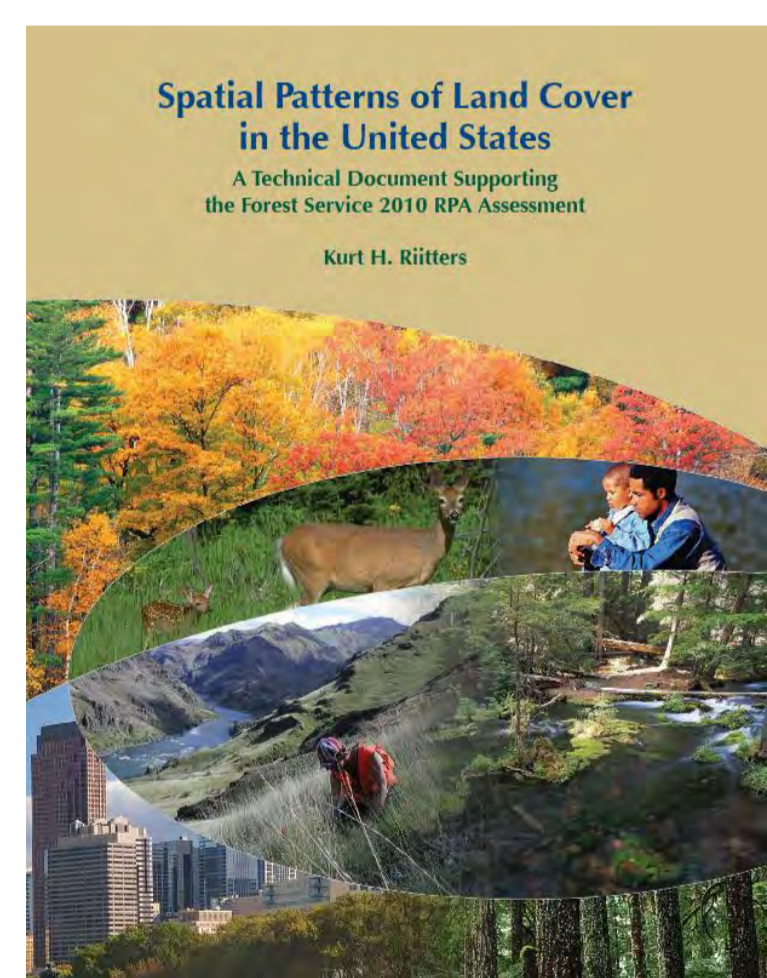


Pattern  
maps

Integration ← Applications ←

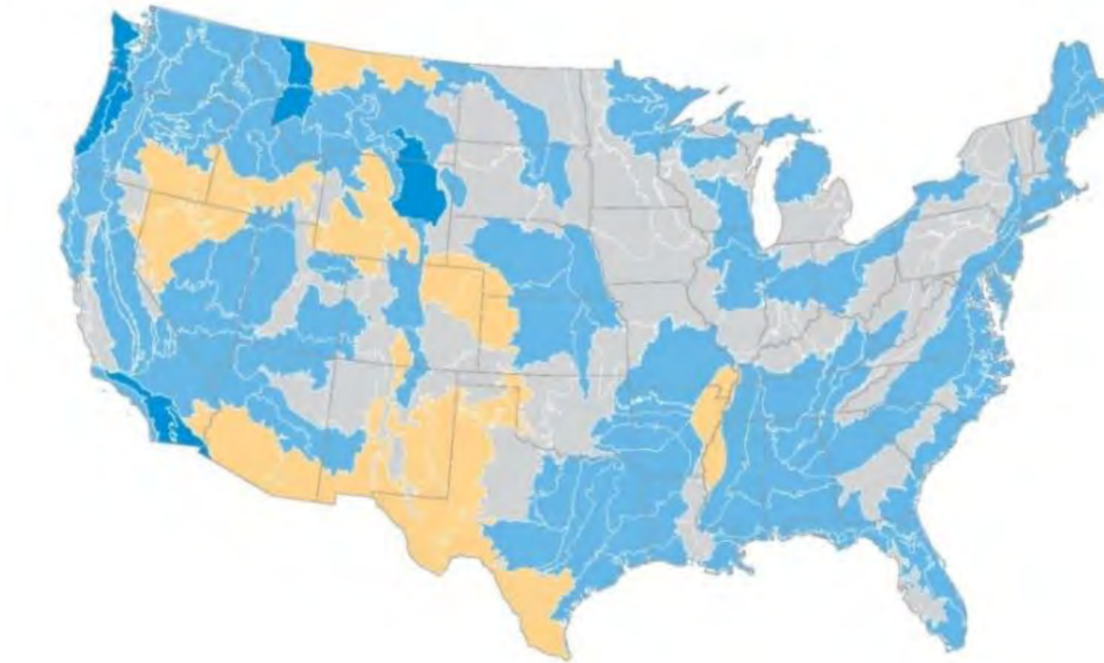
## Monitoring & Assessment

## Research & Development



### Forest area change, 2001 to 2006, under-estimates fragmentation

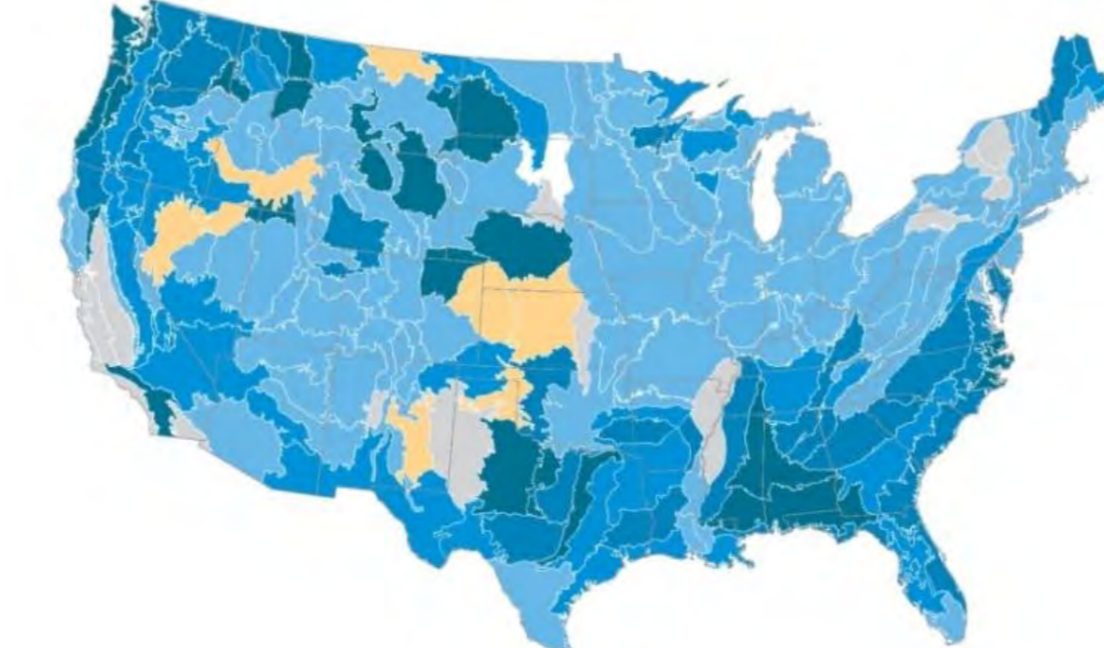
Total forest cover area 0.09 ha scale



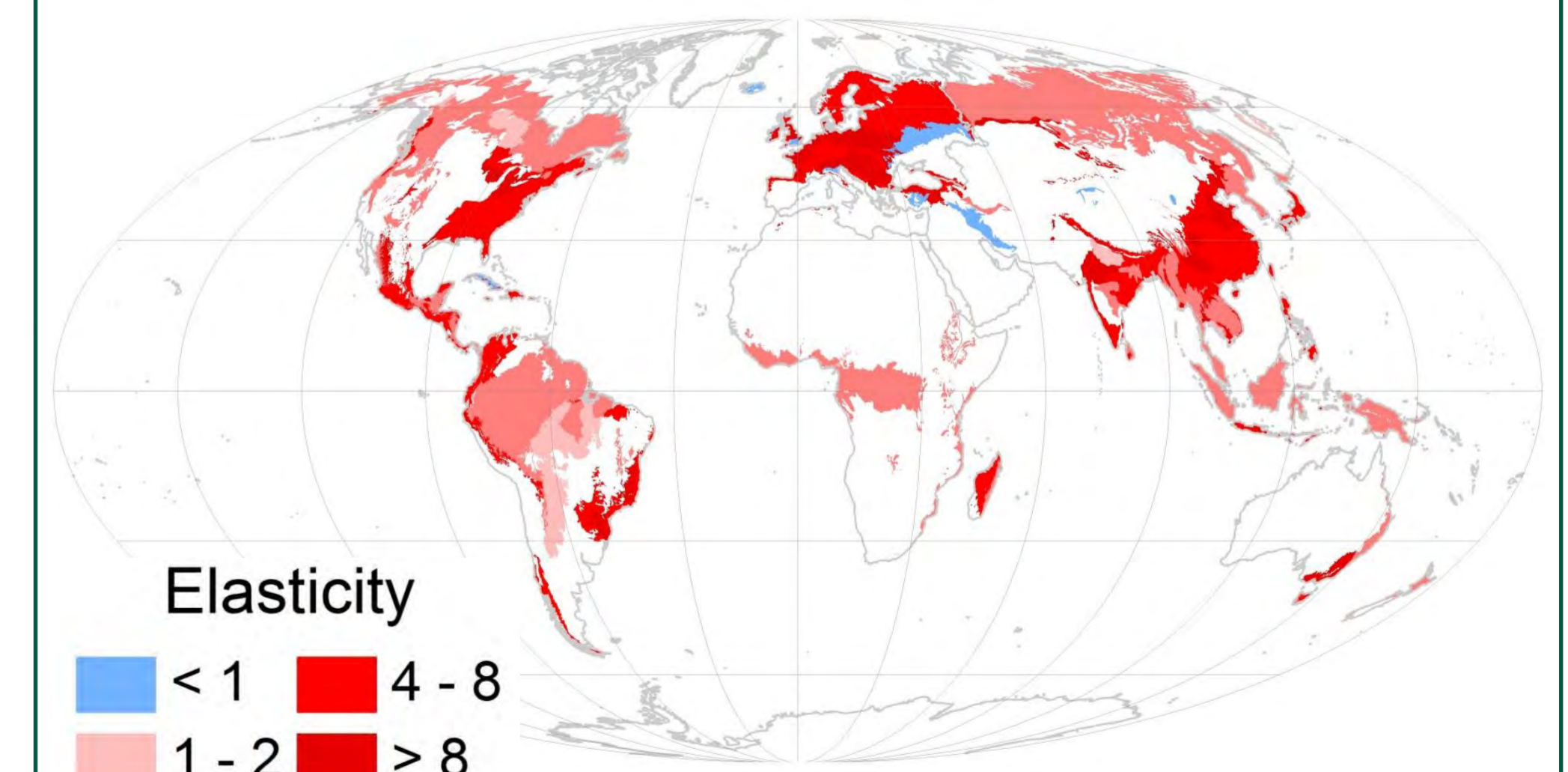
Net change

- >1% gain
- <1% change
- 1% to 4% loss
- 5% to 8% loss
- 9% to 12% loss
- >12% loss

Interior forest area 65 ha scale



### Global hotspots of forest fragmentation, 2000 to 2012



- Elasticity
- < 1
  - 1 - 2
  - 2 - 4
  - 4 - 8
  - > 8

$$\text{Elasticity} = \frac{\% \text{ change of interior forest area } 1 \text{ km}^2 \text{ scale}}{\% \text{ change of total forest cover area } 0.09 \text{ ha scale}}$$

