# Planning for Growth and Open Space Conservation

This webinar series is sponsored by:
USDA Forest Service
State and Private Forestry - Cooperative Forestry

Organized by
Rick Pringle, Susan Stein, Sara Comas, Susan Guynn (Clemson University)
and the
Forest Service National Open Space Conservation Group

CLEMSON
School of AGRICULTURAL, FOREST, AND ENVIRONMENTAL SCIENCES

This webinar is being recorded

Audio is Streamed Through the Computer

# Learn About the Series

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**Listen to our past webinars:**

- Session #9: Private land conservation programs from the Farm Bill: Natural Resources Conservation Service, Farm Service Agency, and US Forest Service.
- Session #8: Landscape Conservation Initiatives: US Fish and Wildlife Service, Bureau of Land Management, Department of Defense, Natural Resources Conservation Service
- Session #7: Science to inform Open Space Conservation: Land use changes, forest fragmentation, and the Wildland-Urban Interface
- Session #6: Facilitating Large Landscape Conservation Efforts: Working effectively across boundaries in the Northeast and Crown of the Continent
- Session #5: Local and Regional Land Trusts: Essential partners and the tools they provide
- Session #4: The Forest Service Toolbox: Conservation easement and land acquisition programs
- Session #3: Green Infrastructure Planning: Connecting partners and greenspaces
- Session #2: YES YOU CAN! Participating in Growth Planning Beyond the Green Line
- Session #1: National Forest Management in the Face of Housing Growth

**Future Topics:**

Please register in advance if you would like to attend these presentations.

- Session #11: An All Lands Approach to Ecosystem Services for Water

**Please submit your feedback here**

# Learn About the Series

Click on the session titles for more info on recordings and slide presentations

# Session #10: Conservation Planning Tools

**Sarah Reed**
Colorado State University
Wildlife Conservation Society

**Ryan Scherzinger**
American Planning Association

**Don Lipscomb**
Clemson University

# Logistics – Q&A

- **Continuing Education Credits**
  - Attend entire presentation
- **Questions for speakers – chat pod**
- **Technical difficulties – chat pod or**

  **email Susan Guynn: SGUYNN@clemson.edu**

# Getting to Know You!

# Ryan Scherzinger

## American Planning Association

# Conservation Planning Tools Assessment

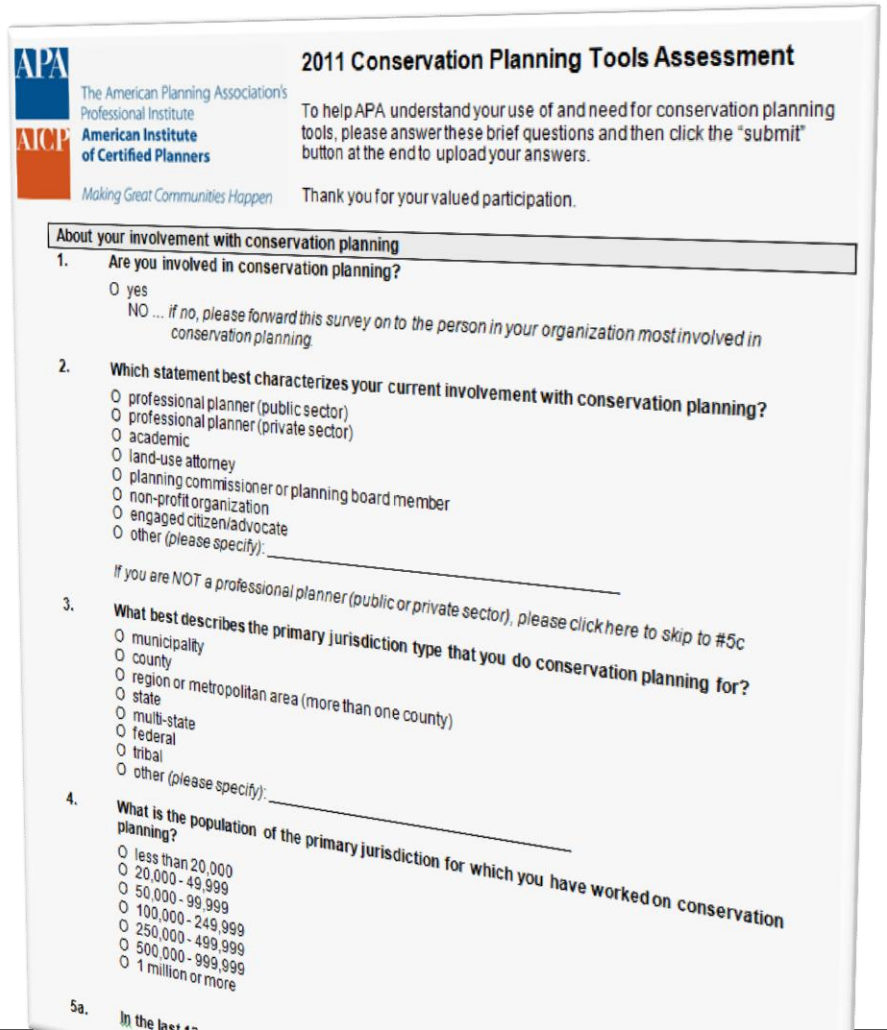
- Partnership between APA, USDA Forest Service, and Clemson University
- Created to assess and better understand planners' use of and needs for conservation planning tools.






# Conservation Planning Tools Assessment

- **1,872 respondents**
- **82% of sample work as professional planners** (others include: academics, non-profit employees, engaged citizens, attorneys, etc.)
  - 65% Public Sector
  - 17% Private Sector
- **All states represented**, including D.C., Puerto Rico, & Virgin Islands



APA
The American Planning Association's Professional Institute
AICP American Institute of Certified Planners
Making Great Communities Happen

**2011 Conservation Planning Tools Assessment**

To help APA understand your use of and need for conservation planning tools, please answer these brief questions and then click the "submit" button at the end to upload your answers.

Thank you for your valued participation.

**About your involvement with conservation planning**

1. **Are you involved in conservation planning?**
   - O yes
   - NO ... *if no, please forward this survey on to the person in your organization most involved in conservation planning*

2. **Which statement best characterizes your current involvement with conservation planning?**
   - O professional planner (public sector)
   - O professional planner (private sector)
   - O academic
   - O land-use attorney
   - O planning commissioner or planning board member
   - O non-profit organization
   - O engaged citizen/advocate
   - O other *(please specify)*: _____

   *If you are NOT a professional planner (public or private sector), please click here to skip to #5c*

3. **What best describes the primary jurisdiction type that you do conservation planning for?**
   - O municipality
   - O county
   - O region or metropolitan area (more than one county)
   - O state
   - O multi-state
   - O federal
   - O tribal
   - O other *(please specify)*: _____

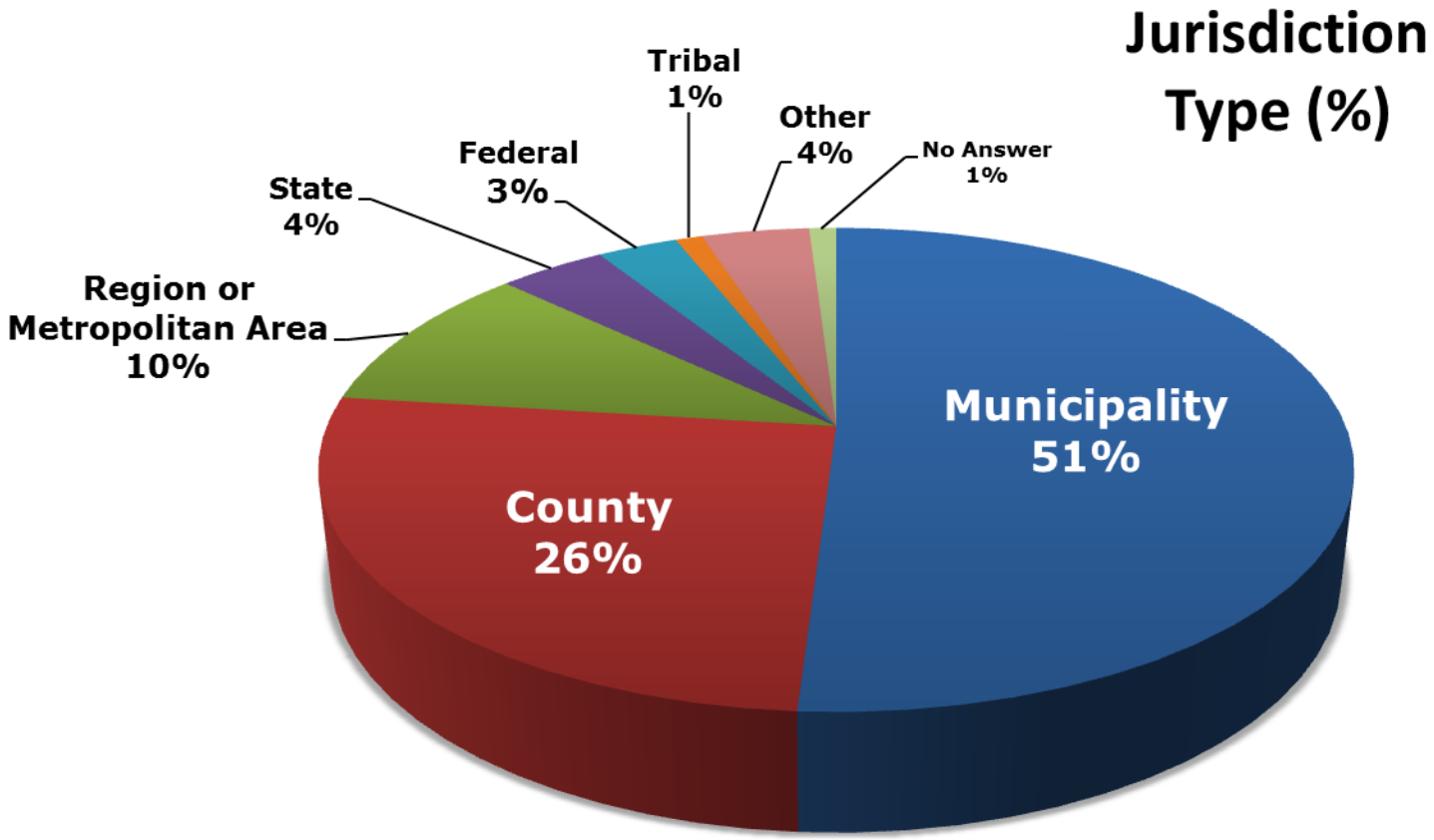
4. **What is the population of the primary jurisdiction for which you have worked on conservation planning?**
   - O less than 20,000
   - O 20,000 - 49,999
   - O 50,000 - 99,999
   - O 100,000 - 249,999
   - O 250,000 - 499,999
   - O 500,000 - 999,999
   - O 1 million or more

5a. In the last

# Conservation Planning Tools Assessment:

## DEMOGRAPHICS

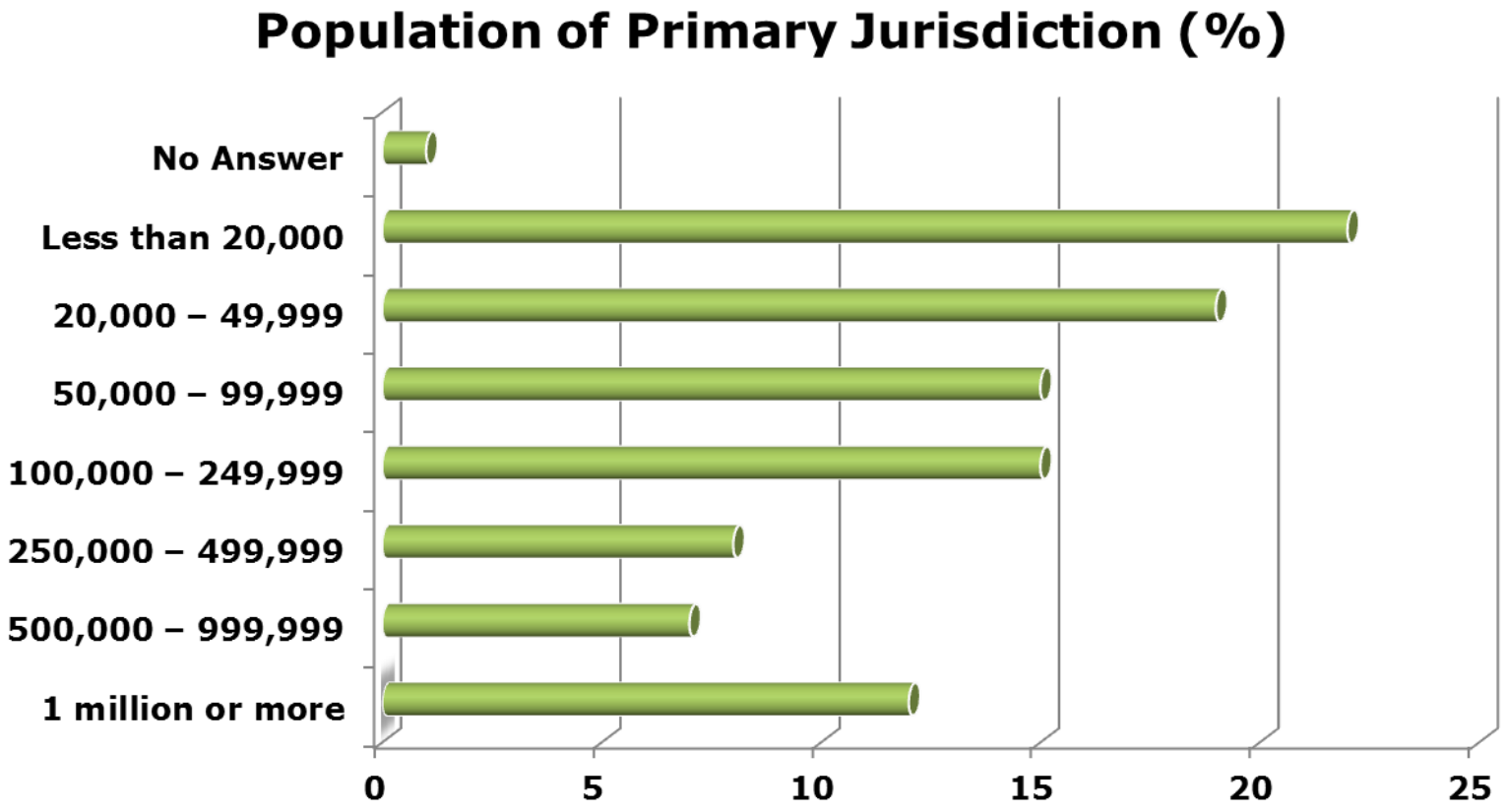
- What best describes the **primary jurisdiction type** you do conservation planning for?



# Conservation Planning Tools Assessment:

## DEMOGRAPHICS

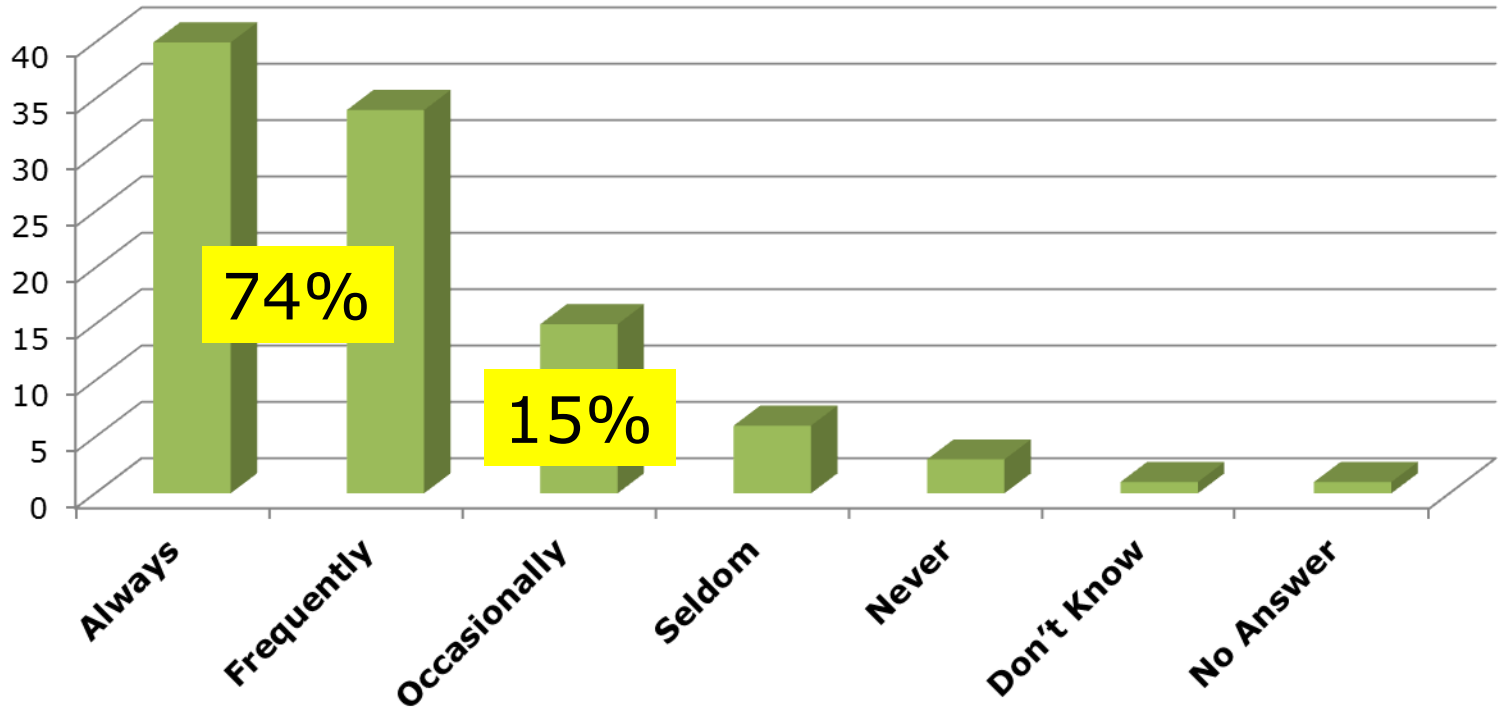
- What is the **population of the primary jurisdiction** for which you have worked on conservation planning?



# Conservation Planning Tools Assessment:

## UTILIZATION OF GIS TOOLS

- **How often** does your organization utilize Geographic Information System **(GIS) tools for conservation planning**?



# Conservation Planning Tools Assessment:

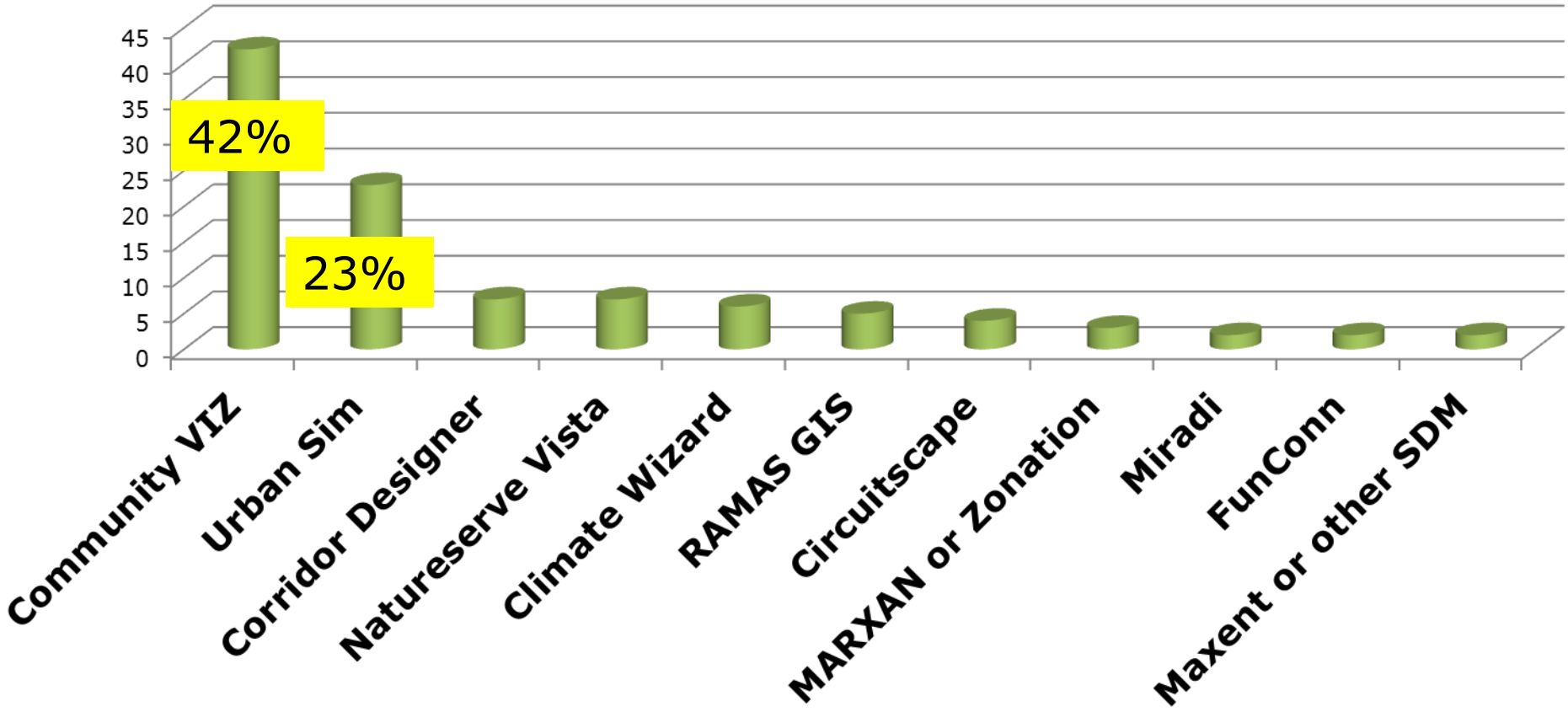
## ORGANIZATIONAL SUPPORT

- There is a **strong support** for conservation planning tools *in our organization*. **49%**
- *Our organization* is **very aware of the capabilities** of conservation tools for planning-related work. **48%**
- *Our organization* has access to **sufficient technical support** for conservation planning tools. **44%**
- *Our organization* **provides or pays for all of the training** we need in conservation planning tools. **27%**
- *Our organization* has **funds allocated** to invest sufficiently in conservation planning tools. **18%**

# Conservation Planning Tools Assessment:

## AWARENESS of Identified Tools

- Which of the following open space conservation planning **tools are you aware of?**



# Conservation Planning Tools Assessment:

## USEFULLNESS of Identified Tools

- For those you are aware of, **how useful do you find each** open space conservation planning tool to your organization/jurisdiction?

**% who ranked 4 or 5 (on a 5-point scale):**

| | |
|---|---|
| Natureserve Vista | 23% |
| RAMAS GIS | 22% |
| Corridor Designer | 19% |
| MARXAN/Zonation | 18% |
| FunConn | 18% |
| Community VIZ | 16% |
| Miradi | 11% |
| Climate Wizard | 10% |
| Circuitscape | 10% |
| Maxent/other SDM | 9% |
| UrbanSim | 9% |

**Mean Summary (on a 5-point scale):**

| | |
|---|---|
| FunConn | 4.0 |
| Miradi | 3.7 |
| Marxan/Zonation | 3.6 |
| Natureserve Vista | 3.6 |
| Corridor Designer | 3.5 |
| RAMAS GIS | 3.4 |
| Climate Wizard | 3.4 |
| Circuitscape | 3.3 |
| Maxent/other SDM | 3.3 |
| Community VIZ | 3.2 |
| UrbanSim | 3.2 |

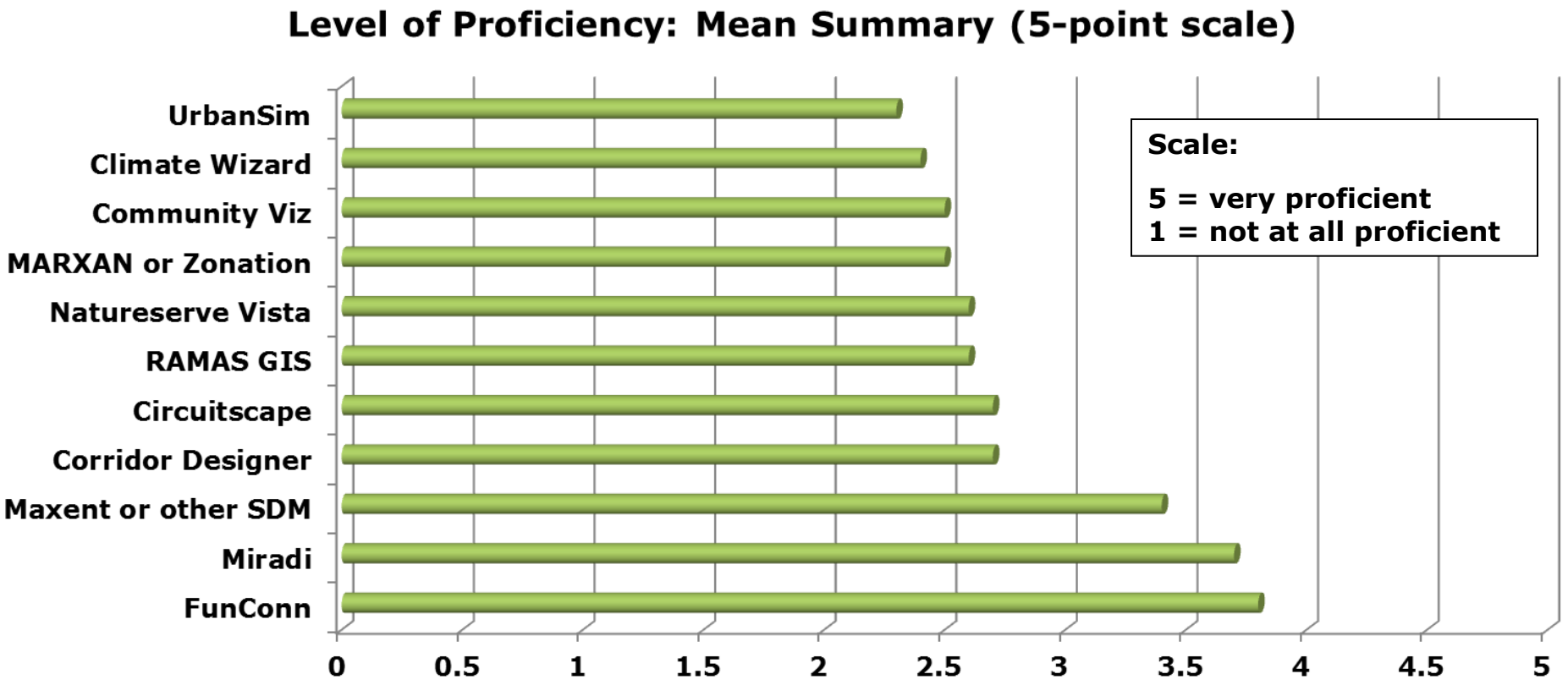
**Scale:**

**5 = very useful**

**1 = not at all useful**

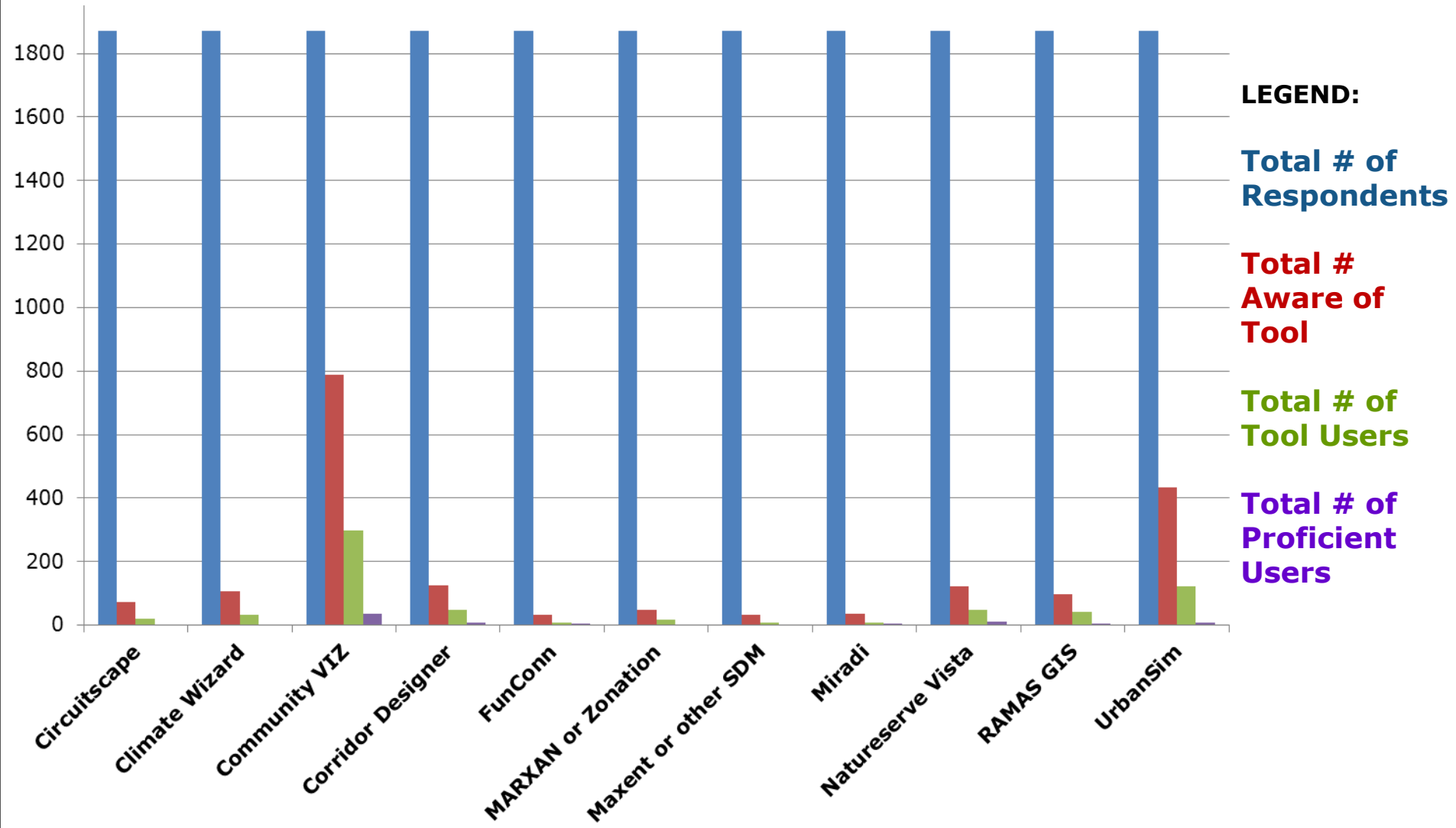
# Conservation Planning Tools Assessment:
## LEVEL OF PROFICIENCY with Identified Tools

- For those you use, **how proficient are you** with each open space conservation planning tool?



# Conservation Planning Tools Assessment:

## PUTTING IT INTO PERSPECTIVE



# Conservation Planning Tools Assessment:

## BARRIERS

- What factors have **prevented you from using** conservation tools in your work?

## TOP 3 ANSWERS:

**Cost of Software** **55%**

**Time Needed to Learn the Tool** **50%**

**Cost of Training** **47%**

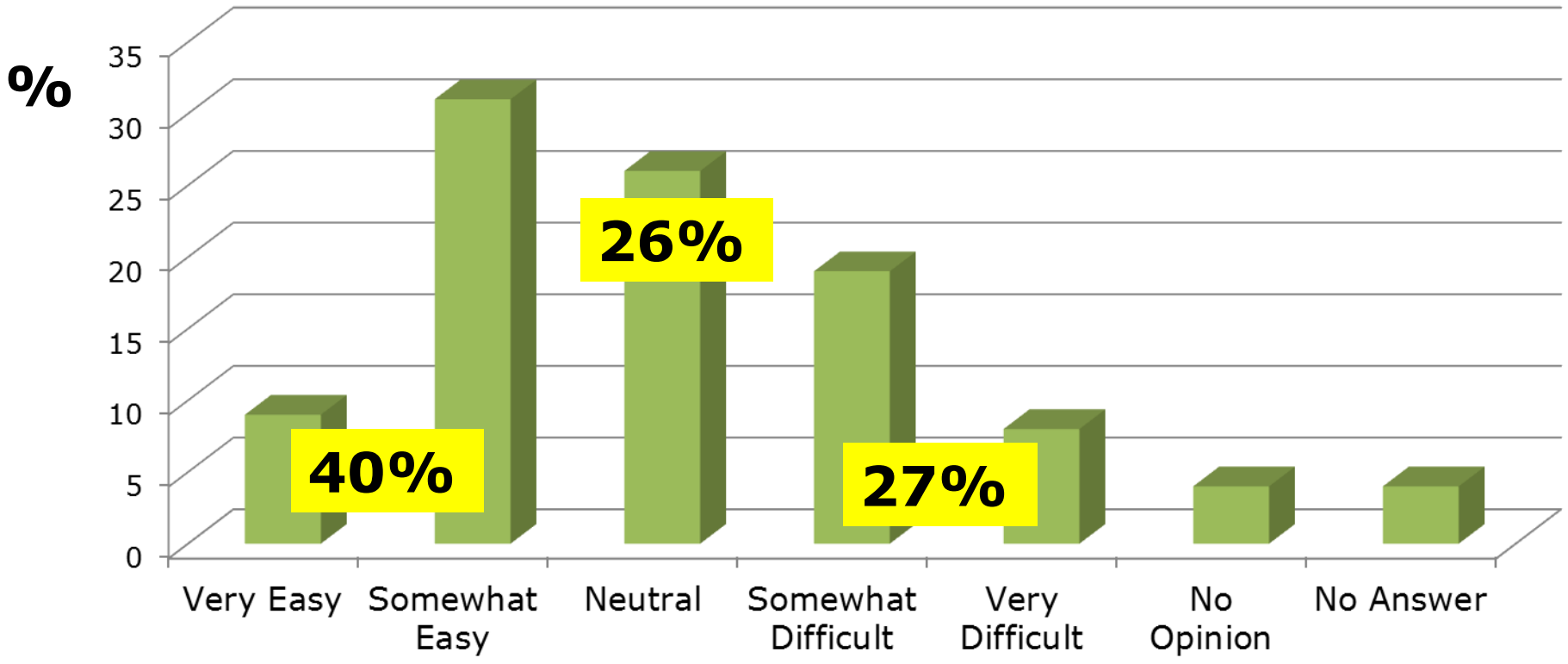
---

**"Current tools are sufficient."** **2%**

# Conservation Planning Tools Assessment:

## COMMUNICATING WITH DECISION MAKERS

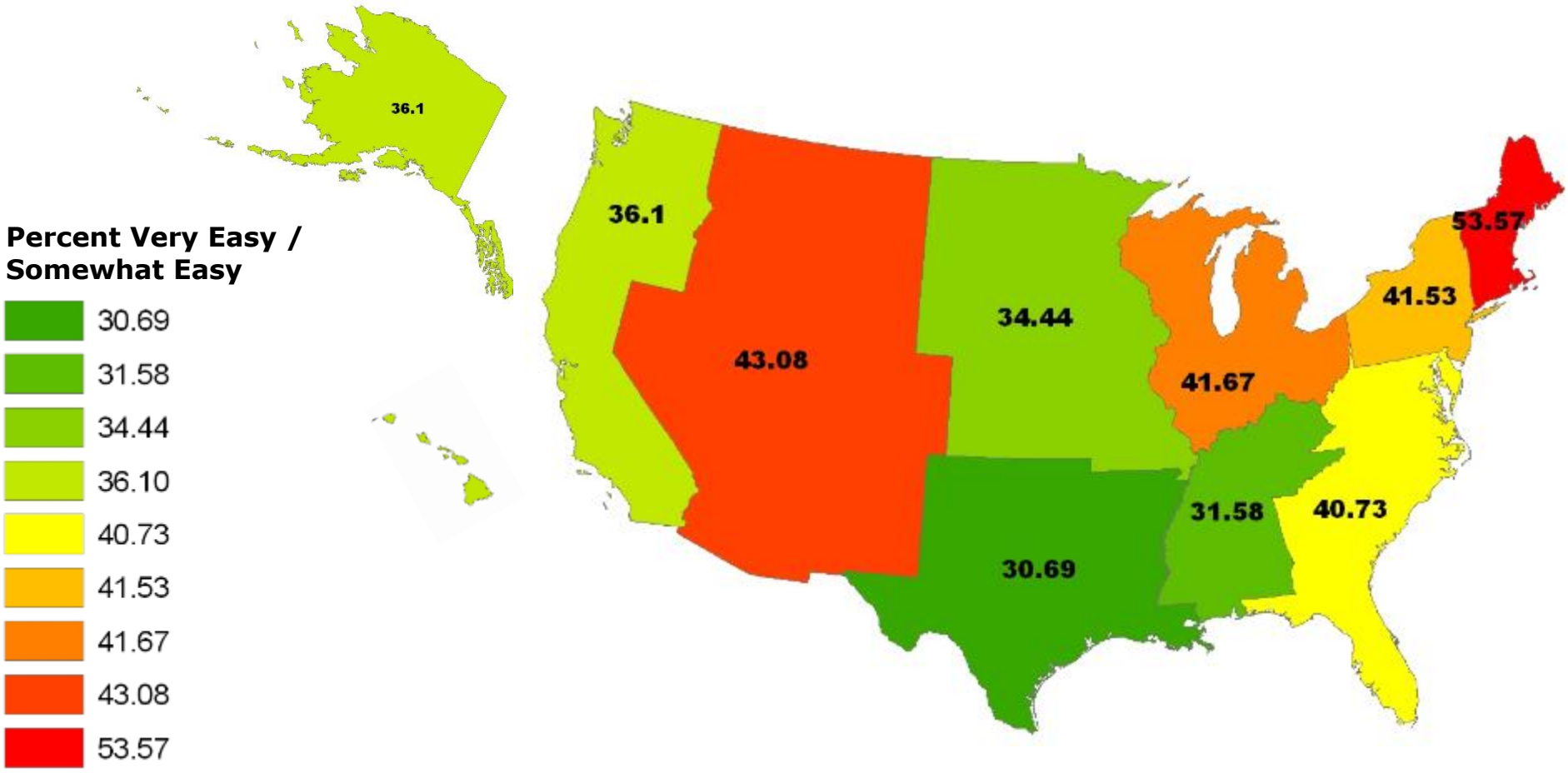
- How easy or difficult is it for you to **communicate conservation planning information with decision makers** in your primary jurisdiction/client?



# Conservation Planning Tools Assessment:

## REGIONS: COMMUNICATING WITH DECISION MAKERS

- How easy or difficult is it for you to **communicate conservation planning information with decision makers** in your primary jurisdiction/client?



# Conservation Planning Tools Assessment:

## USEFULNESS OF MEDIA TYPES

- **How useful do you find each media type** in communicating conservation planning information with decision makers in your primary jurisdiction/with clients?

**Maps (printed)** **79%**

**Mapping Tools (electronic)** **78%**

**Visualization Tools** **78%**

**Social Media** **14%**

# Conservation Planning Tools Assessment:

## ASSISTANCE

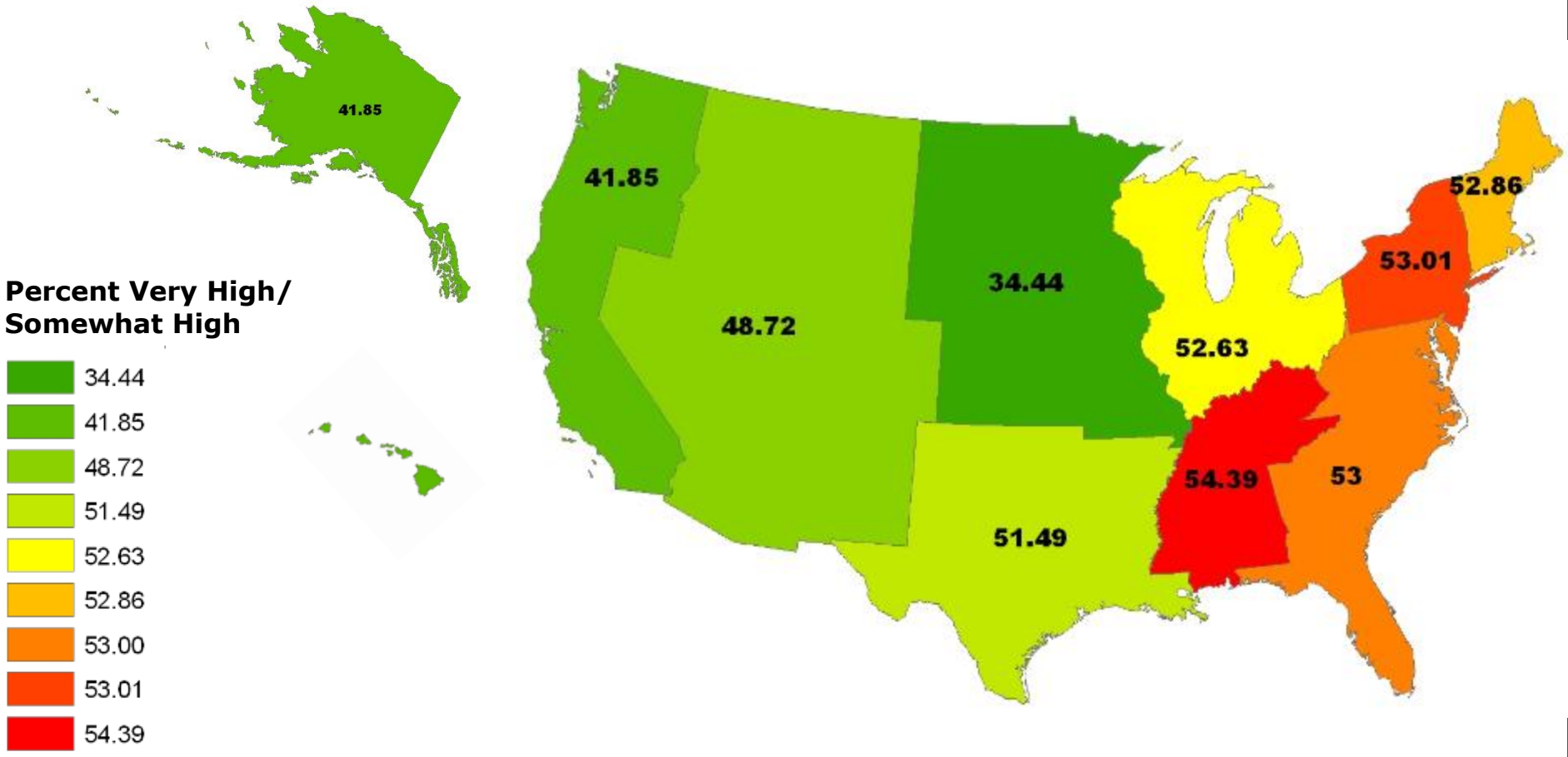
- In the last 12 months, **have you received assistance from any local land management or conservation organizations** in any of your conservation planning efforts?

  - **Local Land Trust 51%**
  - **National Conservation Organization 49%**
    (The Nature Conservancy, Trust for Public Land,…)
  - **State Land Management Agency 46%**
  - **Local Land Management Agency 30%**
  - **U.S. Fish & Wildlife Service 26%**
  - **U.S.D.A. Forest Service 17%**
  - **U.S. National Park Service 14%**
  - **U.S. Bureau of Land Management 9%**

# Conservation Planning Tools Assessment:

## INTEREST IN TRAINING

- What is your **level of interest in web-based training or workshops** focused on the use of specific conservation planning tools and issues related to the tools?



# Conservation Planning Tools Assessment:

## CONCLUSIONS / DISCUSSION

- **Tool Awareness, Use, & Proficiency**
- **Barriers: Time and Money**
- **Evolution and Increasing # of Tools**
- **Need and Demand for Training**
- **Visual Tools are Best**
- **Conservation Planning is Widespread**
- **Assistance is Available at Many Levels**

# Conservation Planning Tools Assessment:

## The End

**Survey results are available on the APA website, including a virtual session from the National Planning Conference (April 2012):**

www.planning.org/partnerships/forestservice/

**Thanks!**

**Ryan Scherzinger**

rscherzinger@planning.org

# Don Lipscomb

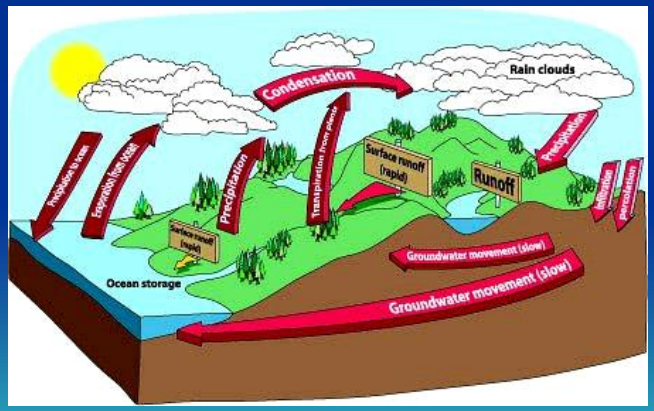
Clemson University

# Landscape Conservation Models

*By:*
*Dr. Rob Baldwin and Don Lipscomb*
*Department of Agricultural, Forestry, and Environmental Sciences*
*Clemson University*

# Model ?

- The abstraction and simplification of a real-world system *(Williams, Nichols, and Conroy,Analysis and Management of Animal Populations)*
- All models are wrong…but some are useful (*George Box, Statistician)*
- A guide to help us think about problems and acknowledge assumptions.



# Landscape?

- Visible features of an area of land.
- Includes physical elements:
  - Landform
  - Mountains
  - Water bodies
- Includes Living and human elements:
  - Vegetation
  - Land use
  - Structures (buildings, roads, etc.)

# Landscape Conservation Models

- Decision Support models for the conservation of wildlife, habitat, water, or other land resources.
- These models are usually spatial in that they are integrated or associated with a GIS program.
- They require input that includes spatial and tabular data at a regional or landscape level.
- They are rule based (need rules & parameters).
- They address specific landscape level problems.

# *Four Conservation Planning Tool Themes*

- ***Wildlife assessment***
- ***Land use and connectivity assessment***
- ***Conservation Strategy Models***
- ***Other Conservation Models***

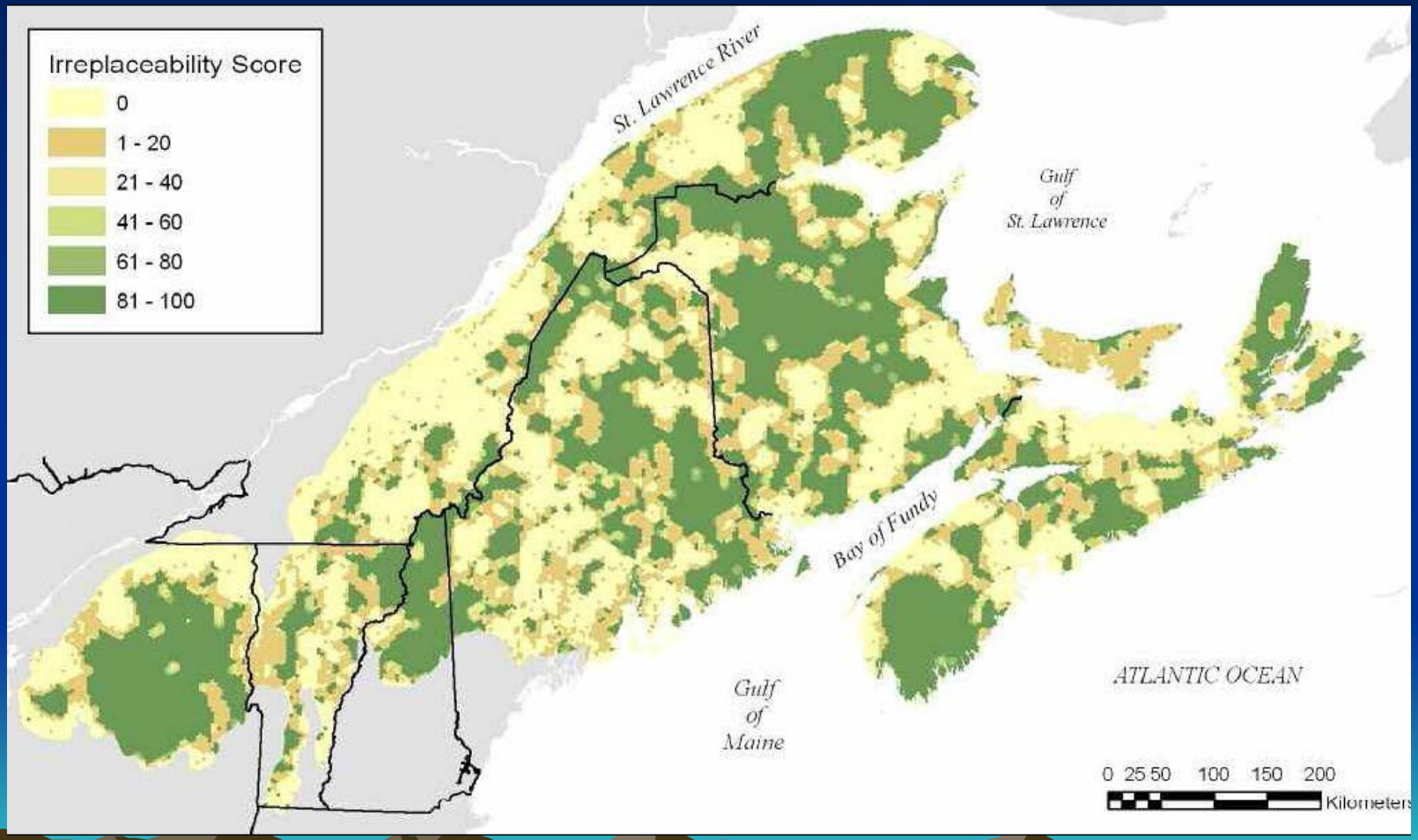
# Some Wildlife Assessment Models:

- Expert Opinion – species distribution (birds)
- Maxent – species habitat modeling
- Presence – patch occupancy (birds)
- Ramas GIS – population viability & risk assessment

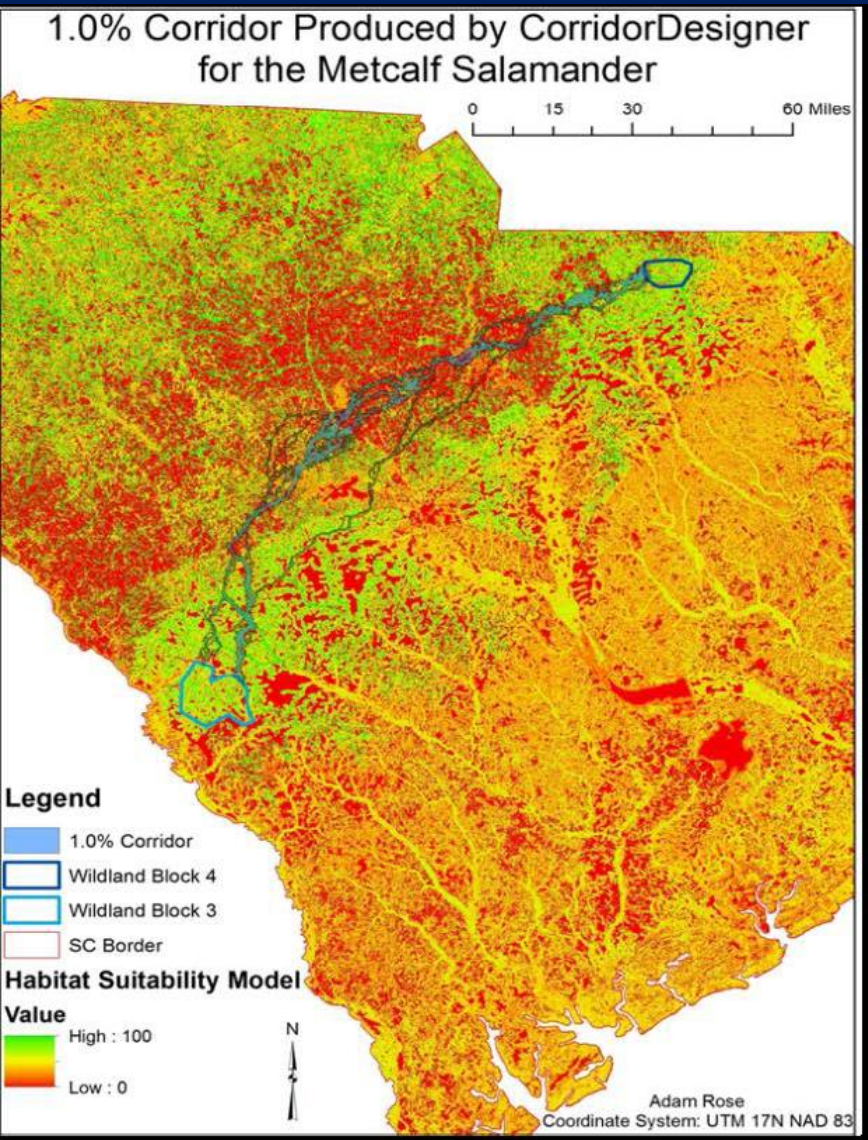
# Some Landuse Assessment

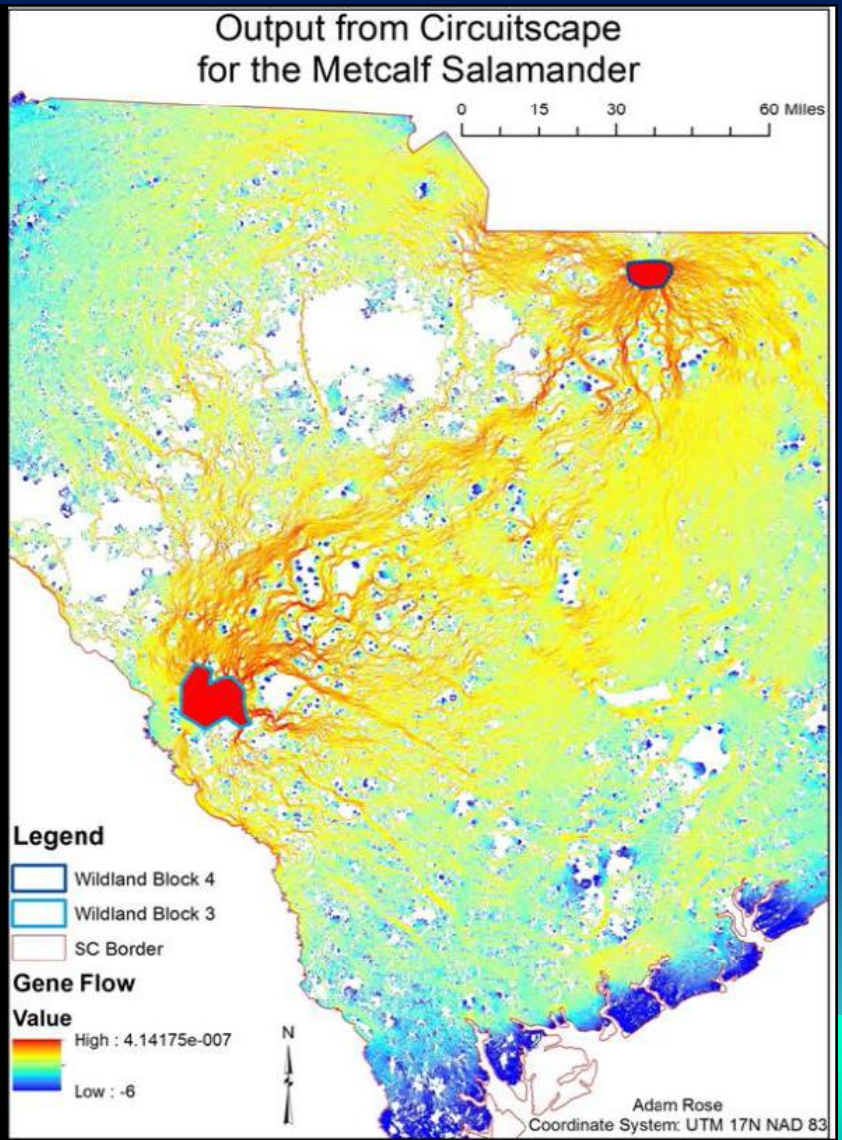
- Marxan – Reserve location
- Zonation – Reserve location
- Corridor Design – Habitat patch connections
- Circuitscape – Habitat patch connections
- Community Viz – Human impact
- Urban Sim – Human impact

# Reserve selection in the Northern Appalachian Ecoregion from MARXAN



# Different Modeling Approaches with Identical Input



# Some Conservation Strategy Models

- Miradi – project management software
- Natureserve Vista -- project management software
- Communitiy Viz – community visualization
- UrbanSim – urban development visualization

# Some Other Conservation Models

- Climate Wizard – climate change
- Human Footprint – human impact
- GAP – protection status
- PAD-US – US protected areas
- NAPAD – North America protected areas
- WDPA – World protected areas

# Distribution of public, protected lands in the United States

# Core Group Considerations

- Project Goals and Objectives
- What data exists and how it can be used
- The status of available data and maps
- What experts are needed (team to assemble)
- What models might apply
- How to incorporate stake holder input
- How to fund the project

# The Plan to Build a Plan

- Assemble spatial data
- Build map layers
- Define Parameters
- Run simulations
- Analyze results
- Decide how to apply the results

# Conclusions and Recommendations

- **Numerous, powerful tools and extensive datasets are available for conservation planning.**
- **Many of these tools are complex, technically challenging, and constantly evolving.**
- **Most land use planners do not have the time, resources or skills to use most of these tools.**
- **Stronger collaboration between land use planners and conservation planners will be critical in implementing conservation on the ground.**

# Some Model Sites

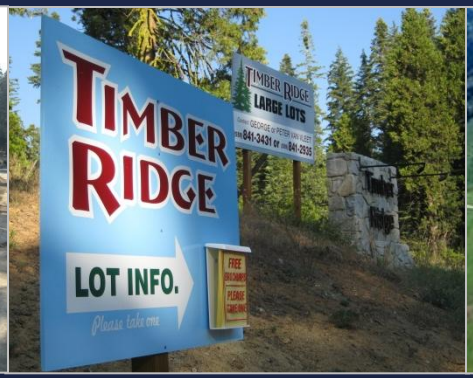
- **Marxan** -- http://www.uq.edu.au/marxan/
- **Zonation** -- http://www.helsinki.fi/bioscience/consplan/software/Zonation/index.html

- **Corridor Designer** -- http://corridordesign.org/
- **Circuitscape** -- http://www.circuitscape.org/
- **Miradi** -- https://miradi.org/
- **Vista** -- http://www.natureserve.org/prodServices/vista/overview.jsp
- **Community Viz** -- http://placeways.com/communityviz/
- **RAMAS GIS** -- http://www.ramas.com/index.php?option=com_k2&view=itemlist&layout=category&task=category&id=41&Itemid=80&lang=en#gis


# Sarah Reed

**Colorado State University**

**Wildlife Conservation Society**


# Strong incentives and weak guidelines for conservation planning in local land-use regulations

SARAH E. REED[1,2], HEIDI E. KRETSER[1], JODI A. HILTY[1] and DAVID M. THEOBALD[2,3]

[1]North America Program
Wildlife Conservation Society

[2]Department of Fish, Wildlife & Conservation Biology
Colorado State University

[3]National Park Service

Smith Fellows
In partnership with the Society for Conservation Biology

conservation development
SCHOOL OF GLOBAL ENVIRONMENTAL SUSTAINABILITY

WILDLIFE CONSERVATION SOCIETY

USFS Webinar Series:
*Planning for Growth and Open Space Conservation*
January 30, 2013

# OUTLINE:

1) What is conservation development?

2) Guidelines and incentives for conservation design

   *Review of local CD ordinances in Western counties, comparison to Northeastern towns*

3) Conclusions and next steps

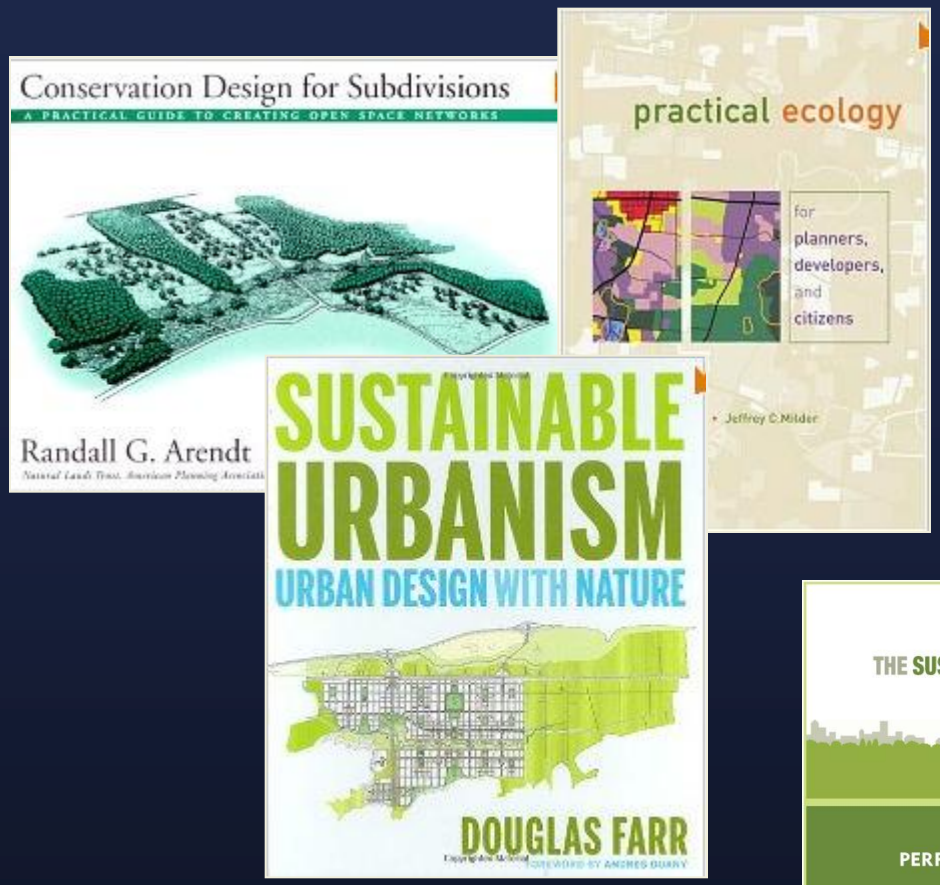

**Conservation Development (CD)** is an approach to the design, construction, and stewardship of a development that achieves functional protection for natural resources while also providing social and economic benefits to human communities.

# CD IN THE U.S.

- 25% of privately-conserved lands
  *4 million ha* (Milder & Clark 2011)
- 3% of new residential development
  *40,000 housing units per year* (McMahon & Pawlukiewicz 2002)
- 20-29% premium on sales price of homes
  (Hannum et al. 2012)

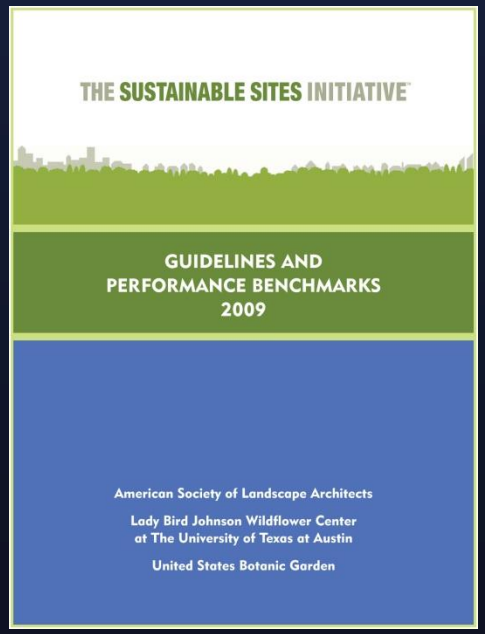
AIR PHOTO NA

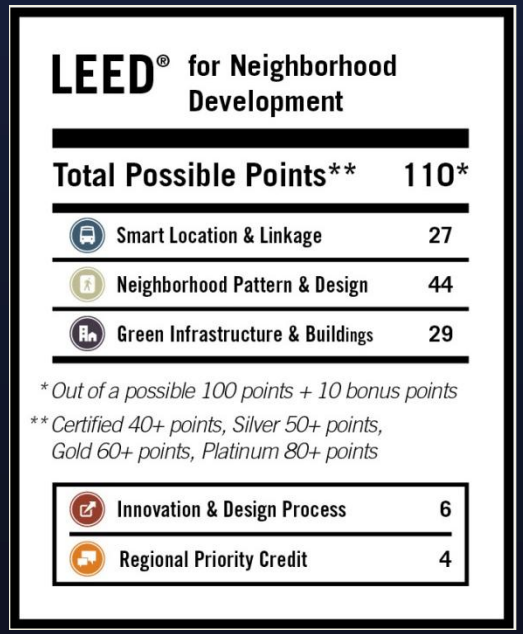
# CONSERVATION DESIGN GUIDELINES




*guidebooks*

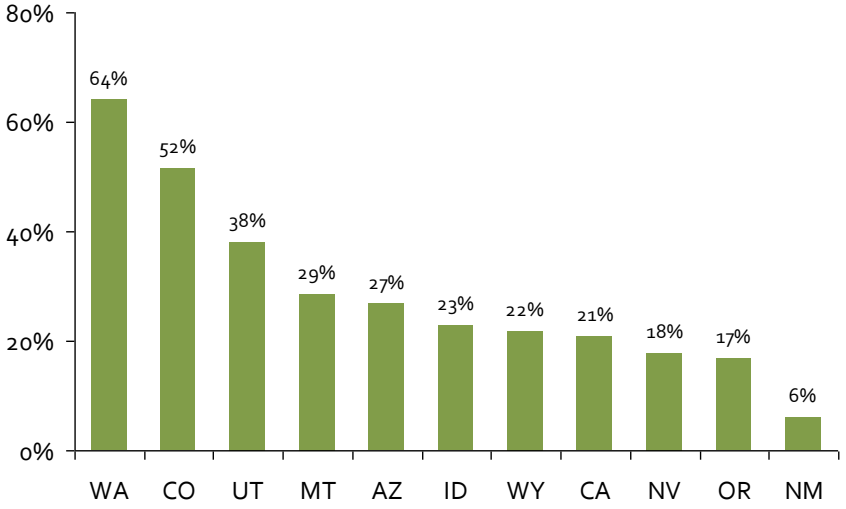
*third-party certification*

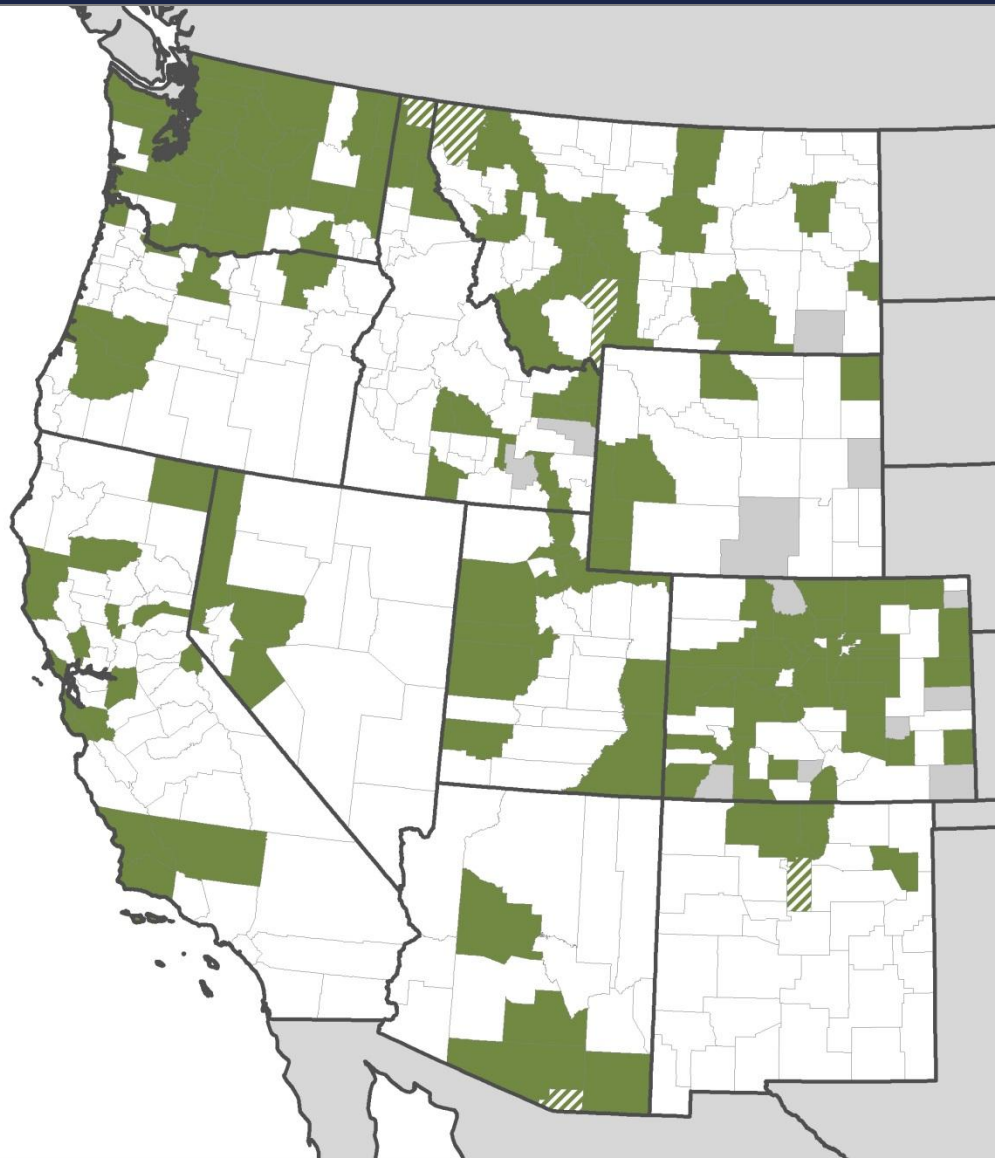


# CD ORDINANCES:

## *Rate of adoption varies by state*



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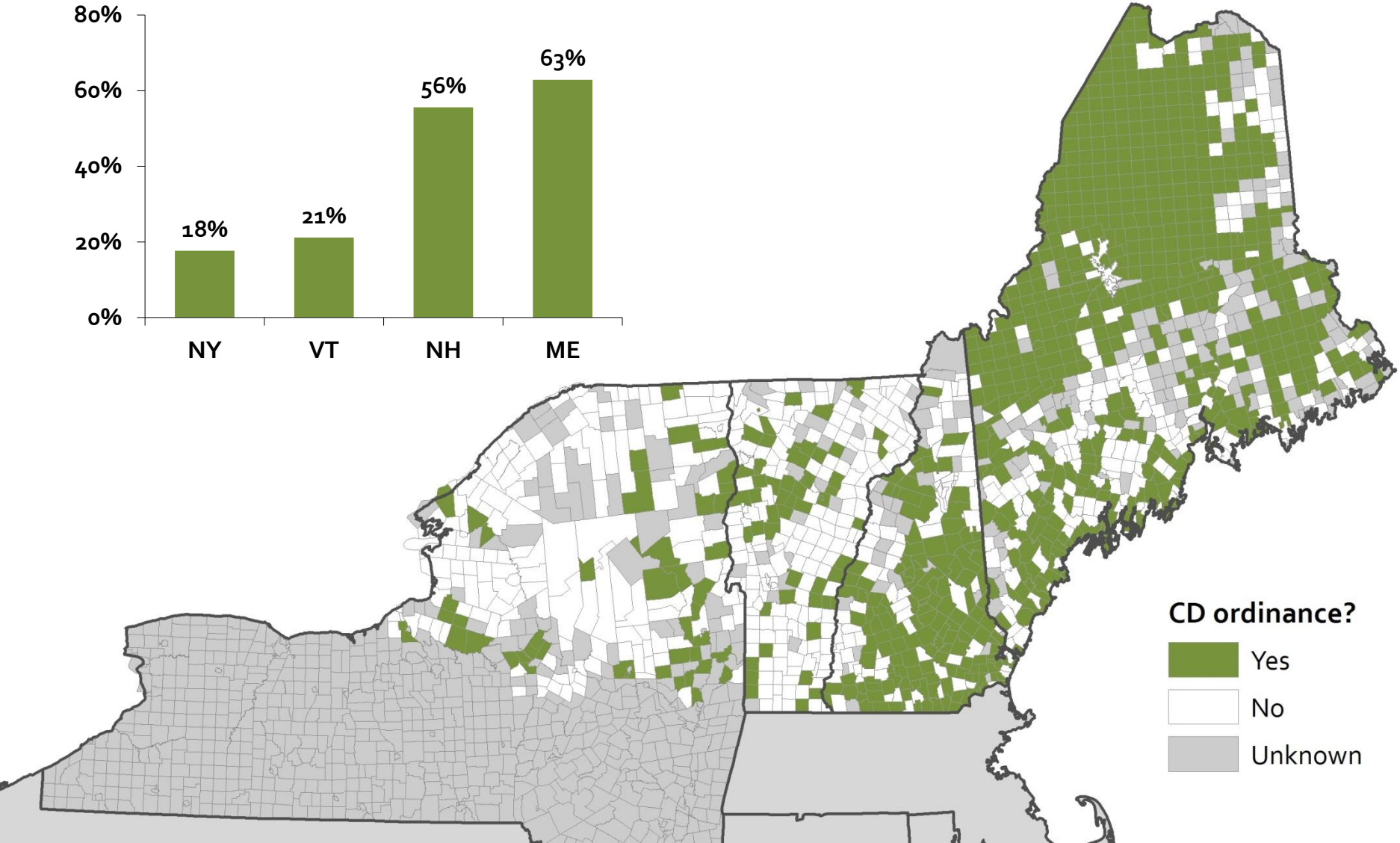
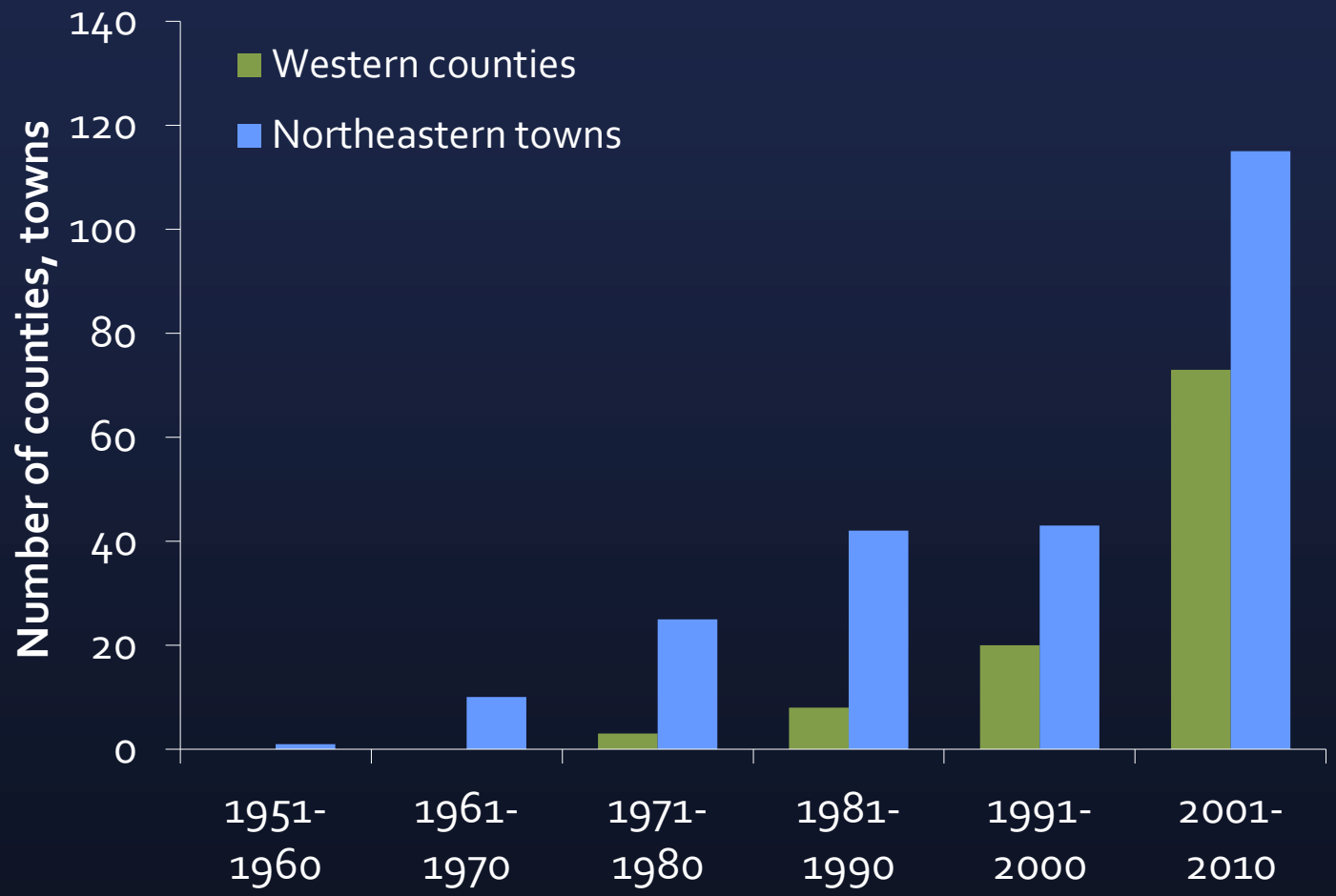


# CD ORDINANCES:

## *Increasing rate of adoption over time*



# REVIEW OF CD ORDINANCES:

## *Key dimensions of conservation design*

**Western US counties*

# REVIEW OF CD ORDINANCES:

## *Key dimensions of conservation design*

- **Density bonus provided as incentive for participation:** ***63%***

**Western US counties*

# REVIEW OF CD ORDINANCES:

## *Key dimensions of conservation design*

- Density bonus provided as incentive for participation: ***63%***

- **Mean increase in development yield permitted as bonus: *66%***

**Western US counties*

# REVIEW OF CD ORDINANCES:

## *Key dimensions of conservation design*

- Density bonus provided as incentive for participation: ***63%***
- Mean increase in development yield permitted as bonus: ***66%***
- **Mean percent of site area required to be protected: *58%***

**Western US counties*

# REVIEW OF CD ORDINANCES:

## *Key dimensions of conservation design*

- Density bonus provided as incentive for participation: ***63%***
- Mean increase in development yield permitted as bonus: ***66%***
- Mean percent of site area required to be protected: ***58%***
- **Site analysis for ecological features required: *13%***

**Western US counties*

# REVIEW OF CD ORDINANCES:

## *Key dimensions of conservation design*

- Density bonus provided as incentive for participation: ***63%***
- Mean increase in development yield permitted as bonus: ***66%***
- Mean percent of site area required to be protected: ***58%***
- Site analysis for ecological features required: ***13%***
- **Site analysis for ecological features required prior to developed area design: *5%***

**Western US counties*

# REVIEW OF CD ORDINANCES:

## *Key dimensions of conservation design*

- Density bonus provided as incentive for participation: ***63%***
- Mean increase in development yield permitted as bonus: ***66%***
- Mean percent of site area required to be protected: ***58%***
- Site analysis for ecological features required: ***13%***
- Site analysis for ecological features required prior to developed area design: ***5%***
- **Design of conservation area requires consultation with a biological expert or conservation plan: *8%***

**Western US counties*

# REGIONAL DIFFERENCES IN CD ORDINANCES:

## *Western counties vs. Northeastern towns*

| COMPARISON | WEST | | NORTHEAST |
|---|---|---|---|
| Percent of local jurisdictions with a CD ordinance | 32% | < | 48% |
| Mean year of adoption | 2002 | > | 1996 |
| Percent of CD ordinances adopted in jurisdictions with a planning department | 93% | > | 33% |
| Mean percent of site area required to be protected | 58% | > | 42% |
| Mean increase in development yield permitted as a bonus | 66% | > | 27% |

# CONCLUSIONS:

1) Opportunities for land and wildlife conservation

   *Adoption of CD ordinances is increasing rapidly*

2) Need for biological expertise

   *Conservation design and consultation requirements are relatively weak, with potential for development intensification*

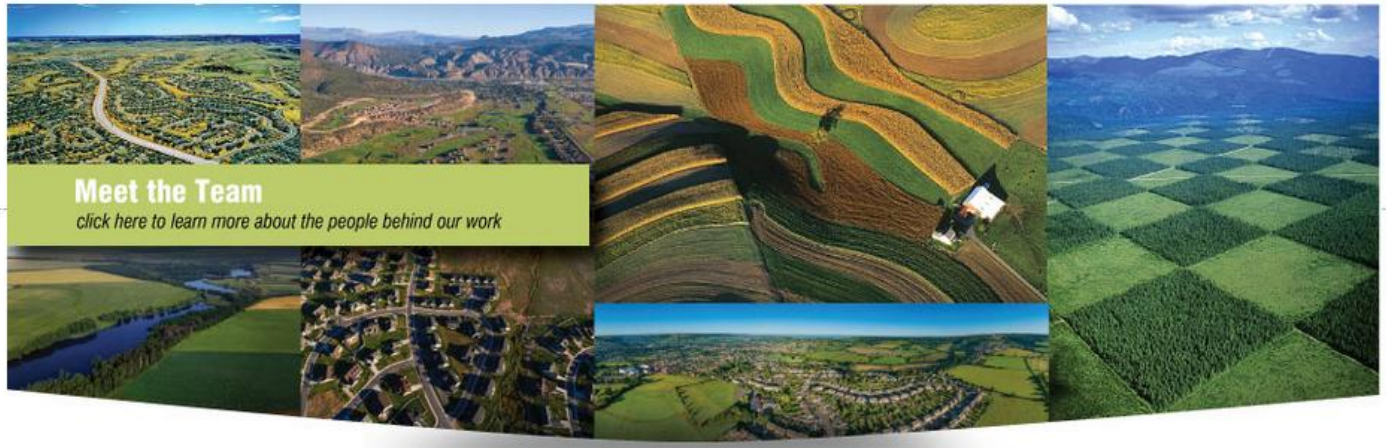
3) Next steps

   *How are CD ordinances implemented in practice?*

Colorado State University

conservation development
GLOBAL CHALLENGES RESEARCH TEAM

HOME | ABOUT | RESEARCH INITIATIVES | RESOURCES | NEWSROOM | BLOG | CONTACT US




## Interdisciplinary Research Collaboration

The Global Challenges Research Team on Conservation Development is an interdisciplinary working group of scholars and practitioners seeking to advance the science and practice of conservation development. Housed within the School of Global Environmental Sustainability at Colorado State University, our group is comprised of leading experts in the social, economic, and ecological dimensions of conservation development from several universities, resource management agencies, and non-profit organizations. We aim to synthesize data on existing CD practice, establish a rigorous scientific basis for evaluating CD designs and policies, and engage with land use planning, development, and conservation practitioners to inform the design of future projects in the United States and around the world.

## What's New...

- Subdividing for Wildlife? High Country News

http://cd.colostate.edu

# ACKNOWLEDGMENTS


## FUNDING

Center for Collaborative Conservation
Robert & Patricia Switzer Foundation
National Association of Realtors
School of Global Environmental Sustainability
Society for Conservation Biology
USDA Forest Service

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# Questions and Answers

Ask questions through the chat pod

# *Session #11*
# *All Lands Approach to Ecosystem Services: Water Focus*

*Wednesday, February 27 at 2:00 pm Eastern*

**Emily Weidner –** *USFS Cooperative Forestry, Washington DC*

**Claire Harper –** *USFS Cooperative Forestry, Colorado*

**Bob Deal –** *USFS Pacific Northwest Research Station*

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# Future Webinar Topics

- **March -** Greening Grey Infrastructure Projects: Federal Highway's *Eco-Logical*, I-90 Snoqualmie Pass East Project – Washington, US Route 33 Bypass - Ohio
- **April -** City and County Open Space Programs
- **May -** Forest Legacy and Protecting Private Lands: Monitoring and Enforcement of Conservation Easements
- **June -** Open Space and All Lands in National Forest Revision Planning
- **July -** Strategic Conservation Planning

# Give us your feedback!

www.fs.fed.us/openspace/webinars

Or Contact

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