

Jun 29th, 11:20 AM - 11:40 AM

Session A7- Assessment of fish passage through stream crossings on southern national forests

Andrea Dolloff

USDA Forest Service, Southern Research Station

Craig Roghair (Presenter)

USDA Forest Service, Southern Research Station

Keith Nislow

USDA Forest Service, Northern Research Station

Jon Walker

Daniel Boone National Forest

Follow this and additional works at: https://scholarworks.umass.edu/fishpassage_conference

Dolloff, Andrea; Roghair (Presenter), Craig; Nislow, Keith; and Walker, Jon, "Session A7- Assessment of fish passage through stream crossings on southern national forests" (2011). *International Conference on Engineering and Ecohydrology for Fish Passage*. 13.
https://scholarworks.umass.edu/fishpassage_conference/2011/June29/13

This Event is brought to you for free and open access by the Fish Passage Community at UMass Amherst at ScholarWorks@UMass Amherst. It has been accepted for inclusion in International Conference on Engineering and Ecohydrology for Fish Passage by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.



Assessment of fish passage through stream crossings on southern National Forests

**C. Andrew Dolloff¹, Craig Roghair¹,
Keith Nislow², Jon Walker³**

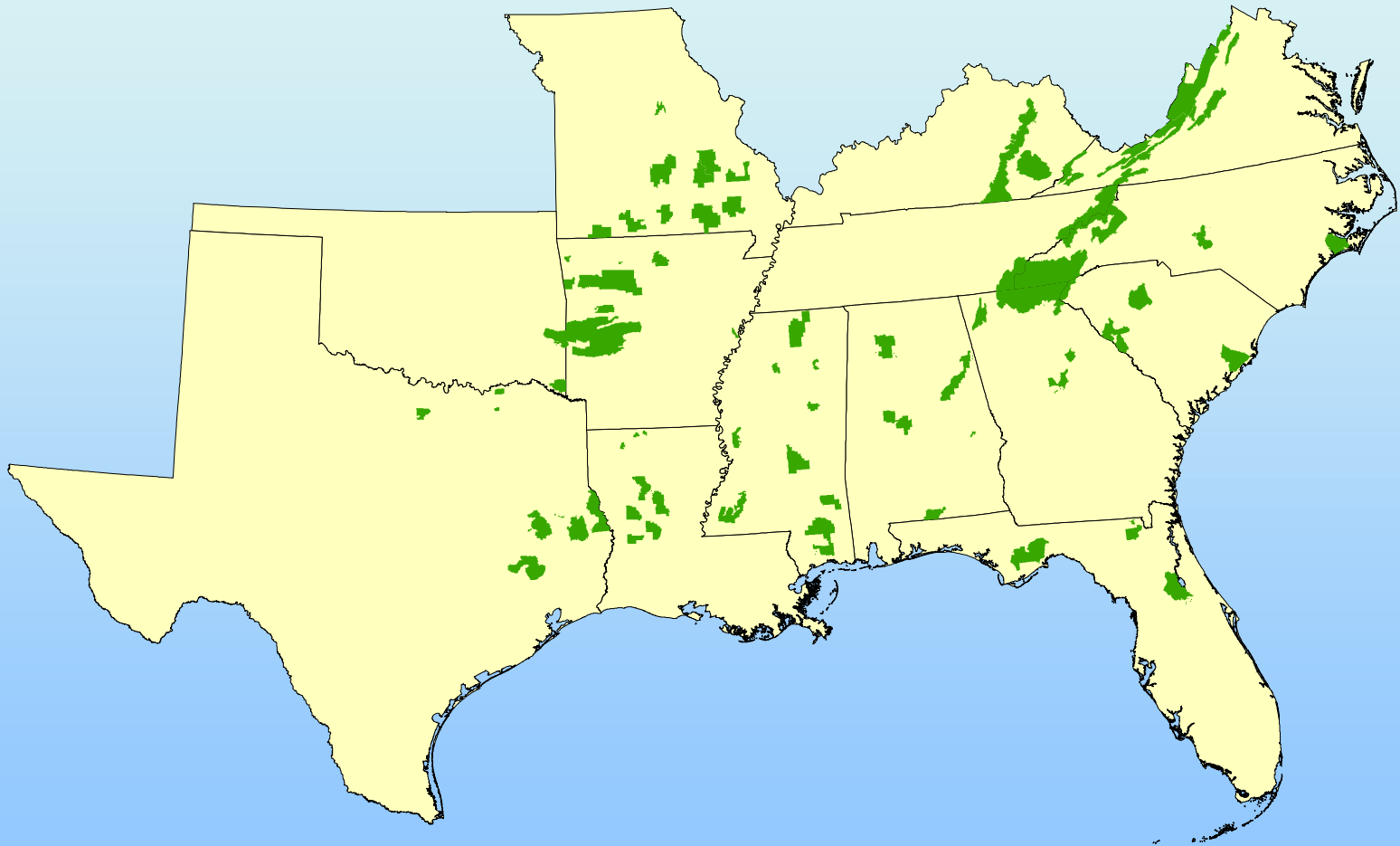
National Conference on Engineering & Ecohydrology for Fish Passage, University of MA Amherst, June 2011

¹USDA Forest Service, Southern Research Station

²USDA Forest Service, Northern Research Station

³Daniel Boone National Forest, KY

National Forests



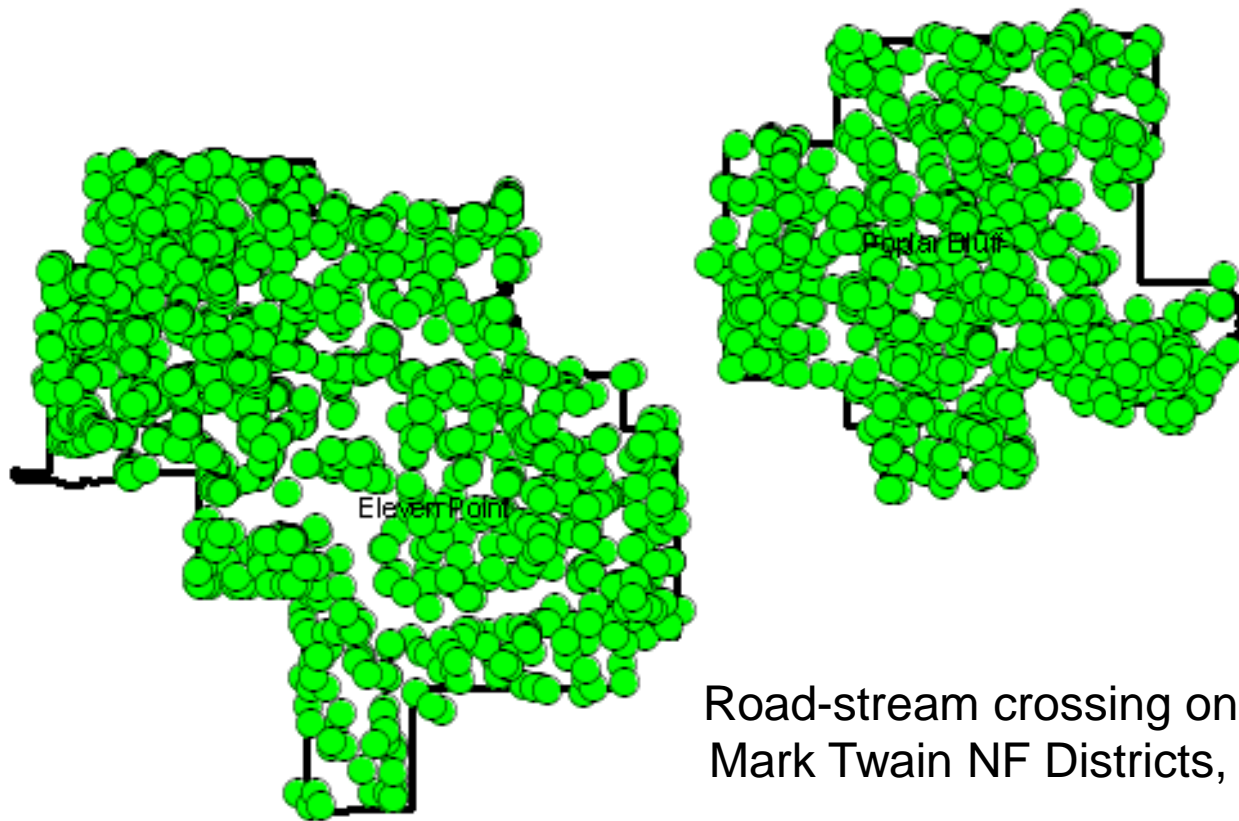
The Southern Perspective



- Across 14 states
 - over 660 species FW fish, 188 TES
 - 269 species FW mussels, 60% TES
 - Crayfish, amphibians, reptiles, insects, etc.



Scope of Problem



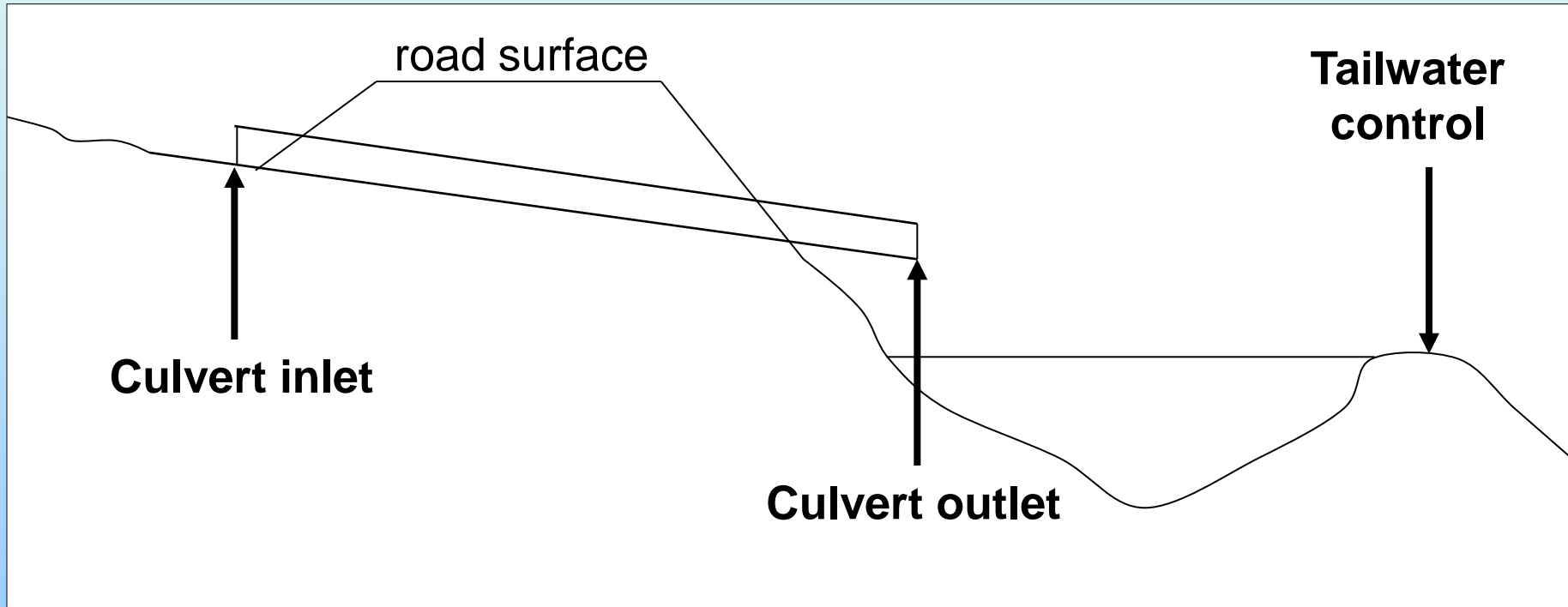
Road-stream crossing on two
Mark Twain NF Districts, MO

Approach

- Management need
 - Region-wide
- Research technology
 - NIAP field protocols
 - Regional models
- CATT program
 - Customized survey
 - Hire, equip, train, & deploy field crews
 - Annual reports



Field Survey

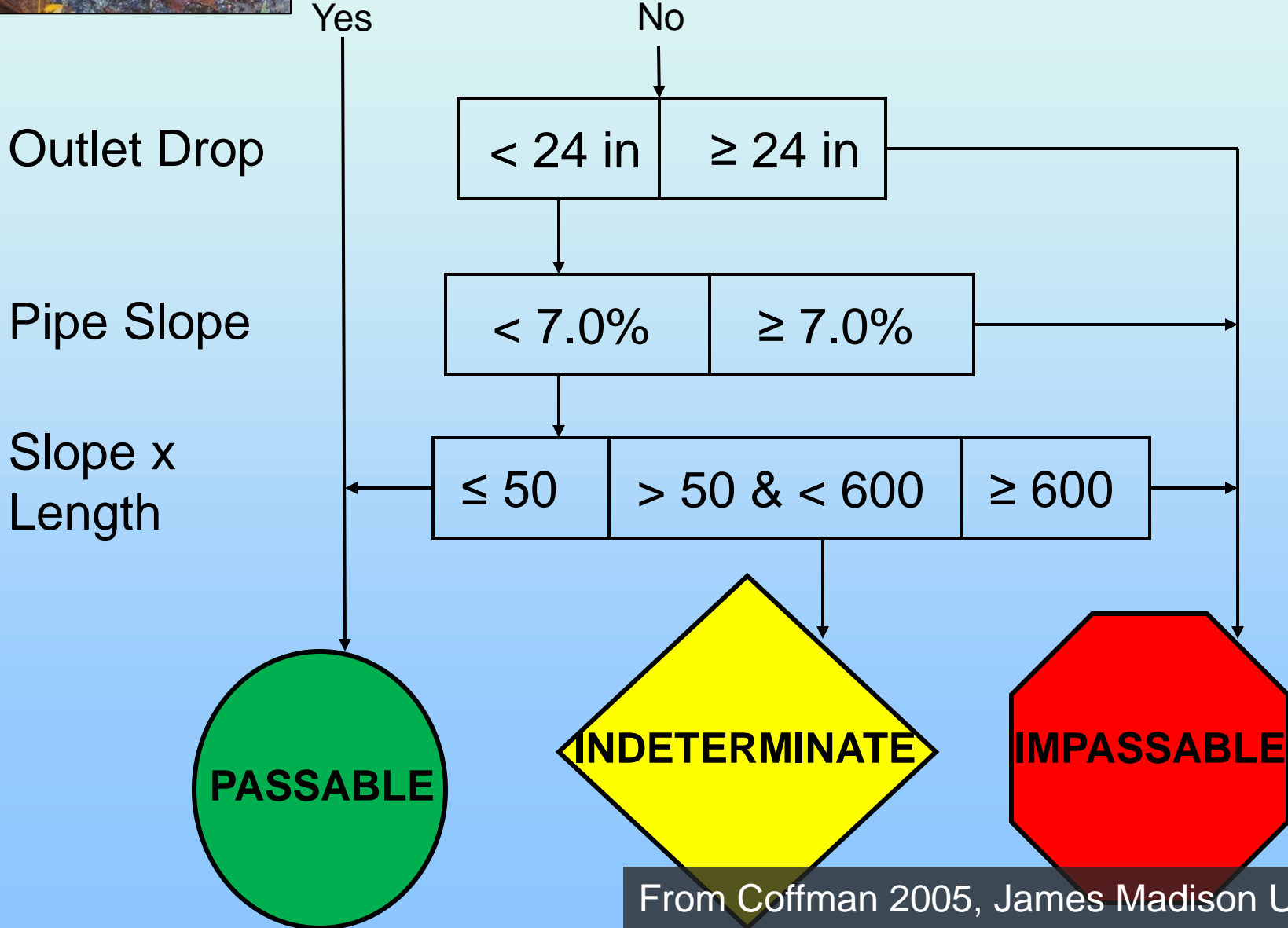


Modified from Clarkin et al. 2003

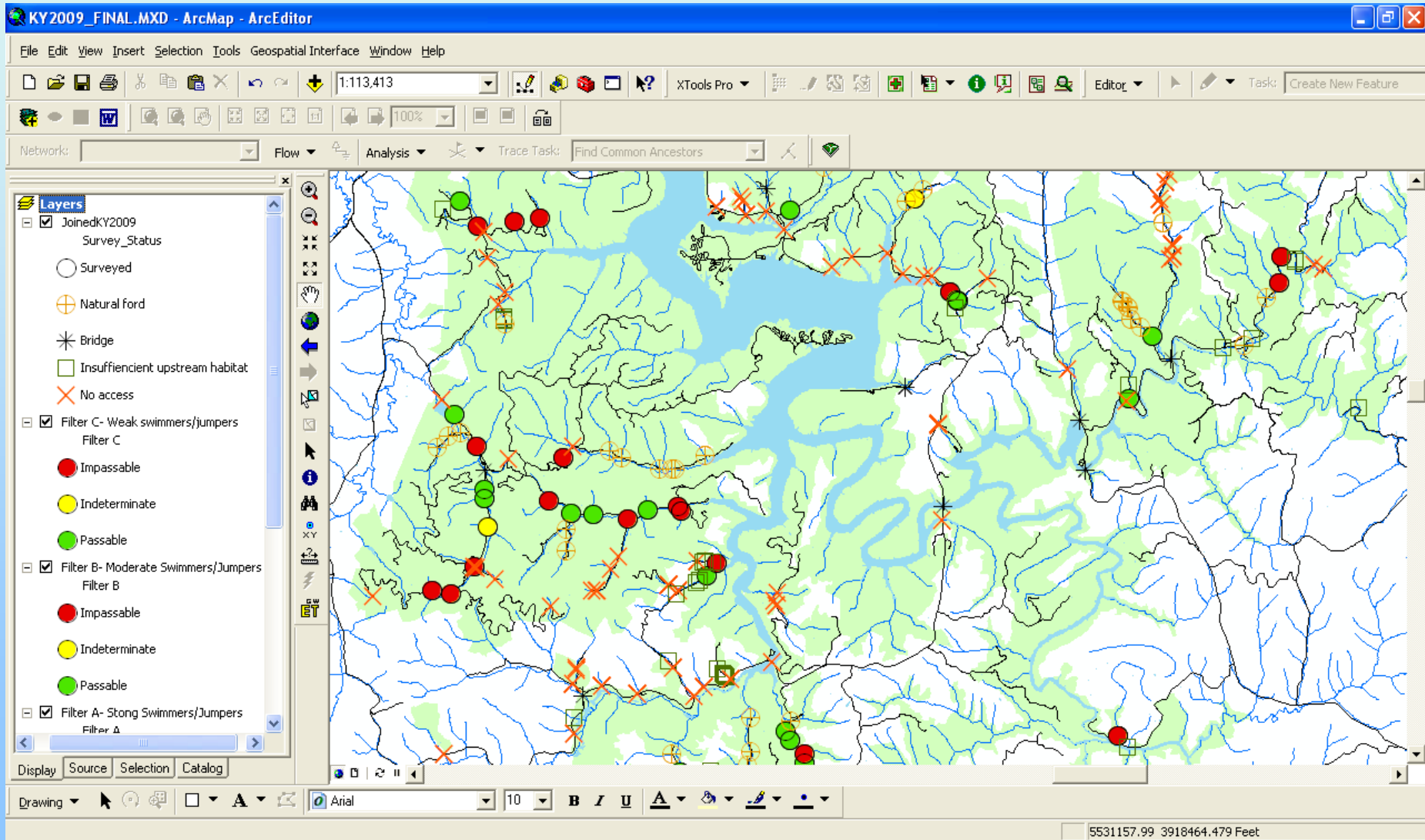
Filter A



Pipe fully backwatered or 100% of structure bottom covered by substrate

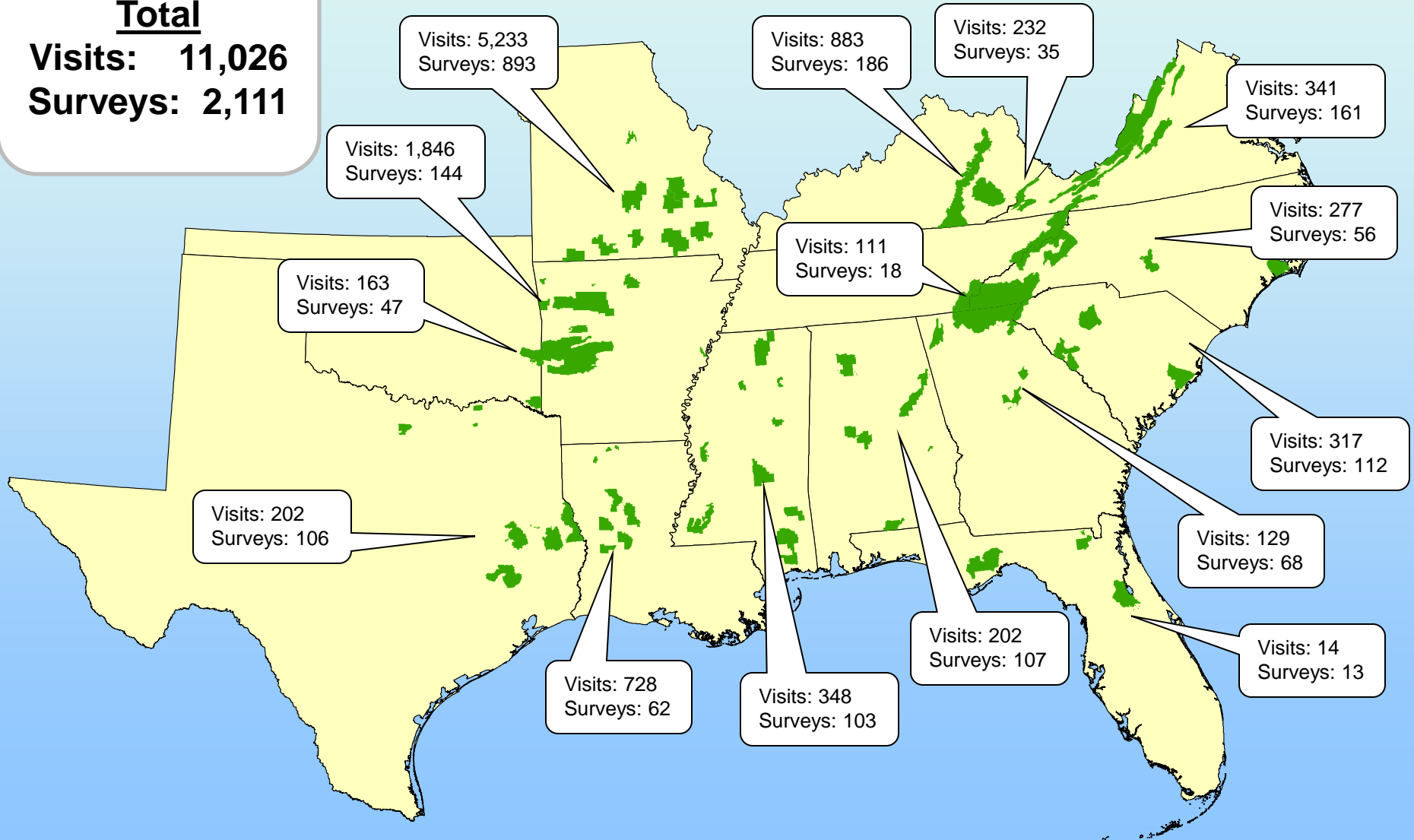


Standard Products (GIS/databases)



CATT AOP 2005 - 2010

Total
Visits: 11,026
Surveys: 2,111

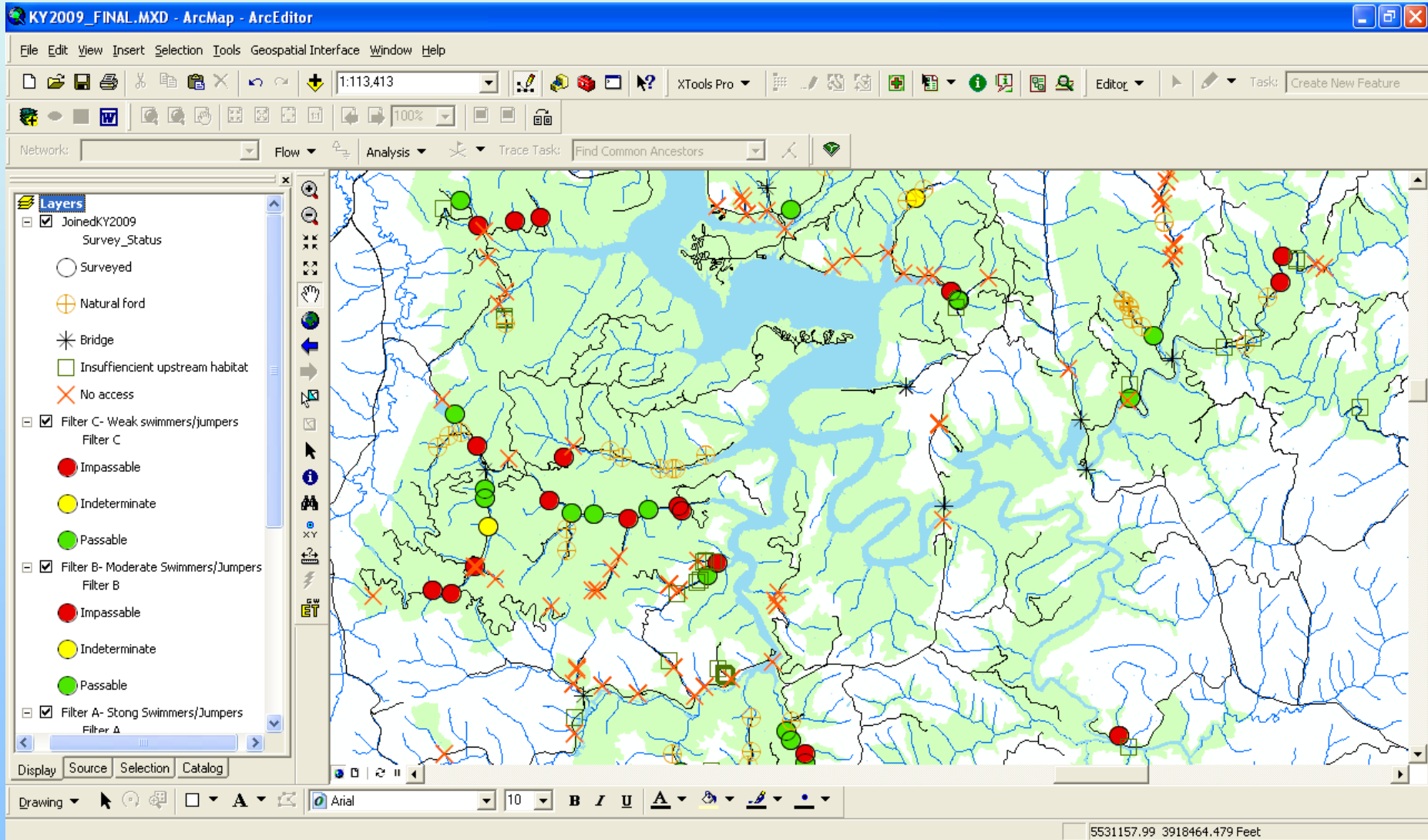


Lessons Learned



Decision support

Where do I start?

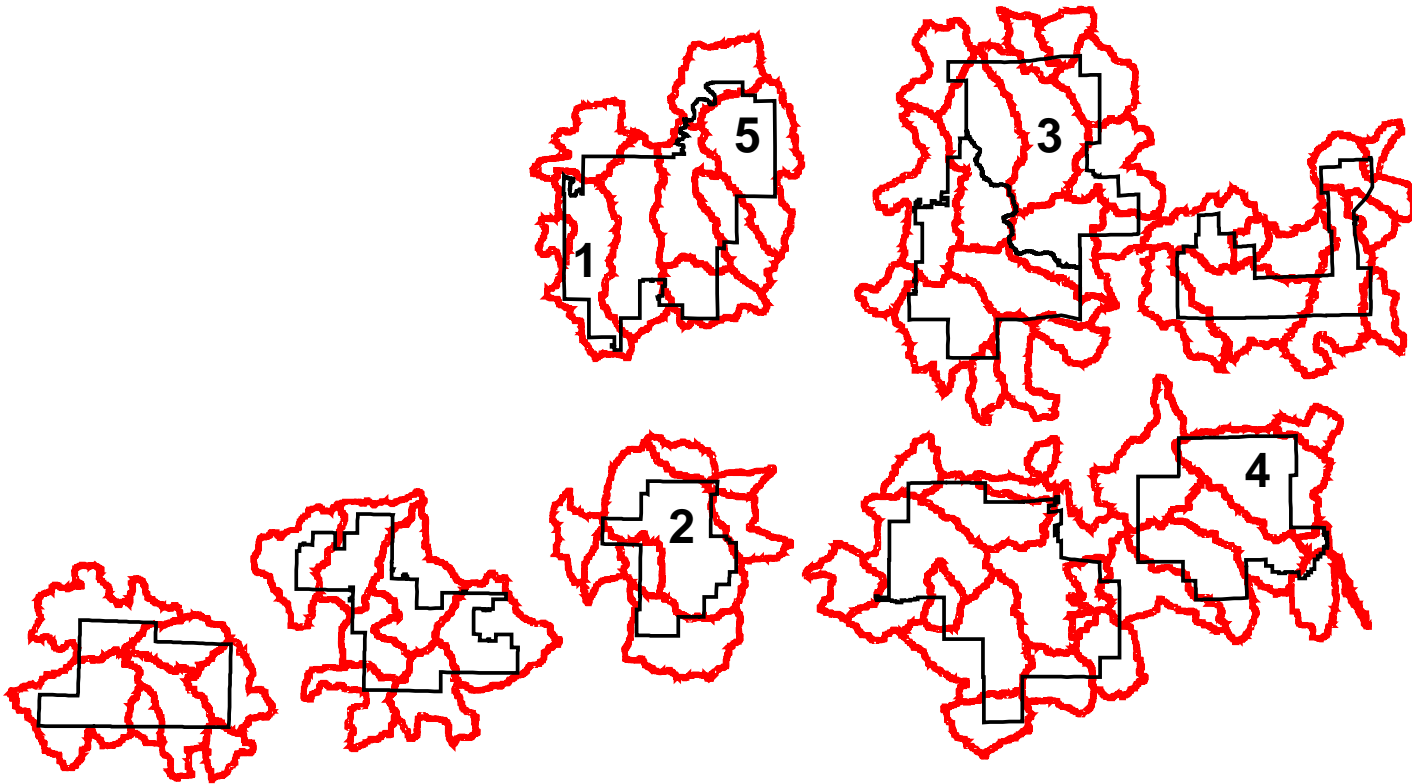


Watershed Prioritization

The screenshot shows the 'CADSS Watershed Prioritization Tool' window. At the top, there is a navigation bar with four tabs: 'MDC Mussels', 'MDC Natural Heritage', 'Species Diversity', and 'Summary'. Below this, there is a sub-navigation bar with four items: 'Analysis Area', 'Impassable Crossing Density', 'Land Ownership', and 'MDC Fish'. The main content area is titled 'MDC Fish Species Presence Criteria' with a category weight of 24.39%. It asks 'How important is it to target particular species?' and provides four radio button options: 'Extremely' (selected), 'Somewhat', 'No opinion', and 'Not at all'. The 'Extremely' option is further detailed with two sub-options: 'The most important watersheds contain the target fish species' (selected) and 'do not contain the target fish species'. Below this, it asks 'What is your fish species distribution dataset?' and shows a dropdown menu set to 'MDC_FishCollections' with '(84901 features)'. There is an unchecked checkbox for 'All locations in this layer will be evaluated in the analysis'. The next section is 'Choose species of interest using field values', with a dropdown for 'Which field identifies the target species?' set to 'COMMON' and another dropdown for 'Choose value to select species of interest' set to 'CRYSTAL DARTER'. It shows 'Number of features selected: 52' and a link for 'View/Modify SQL'. At the bottom left is a link 'What is CADSS?'. At the bottom right are buttons for 'Cancel', '< Previous', 'Next >', and 'Calculate'.

CADSS tool developed by Conservation Management Institute, Virginia Tech

Watershed Prioritization



Crossing Prioritization

Crossing Assessment DSS

About CADSS | Crossings To Replace | Stream Miles Opened | Budget Constraints | Area Of Interest | Options

Number of Crossings (required)

I want to replace crossings (maximum of 5)

Ownership (choose one)

When selecting crossings to replace, how important is Forest Service management? ?

Extremely

Somewhat

No opinion

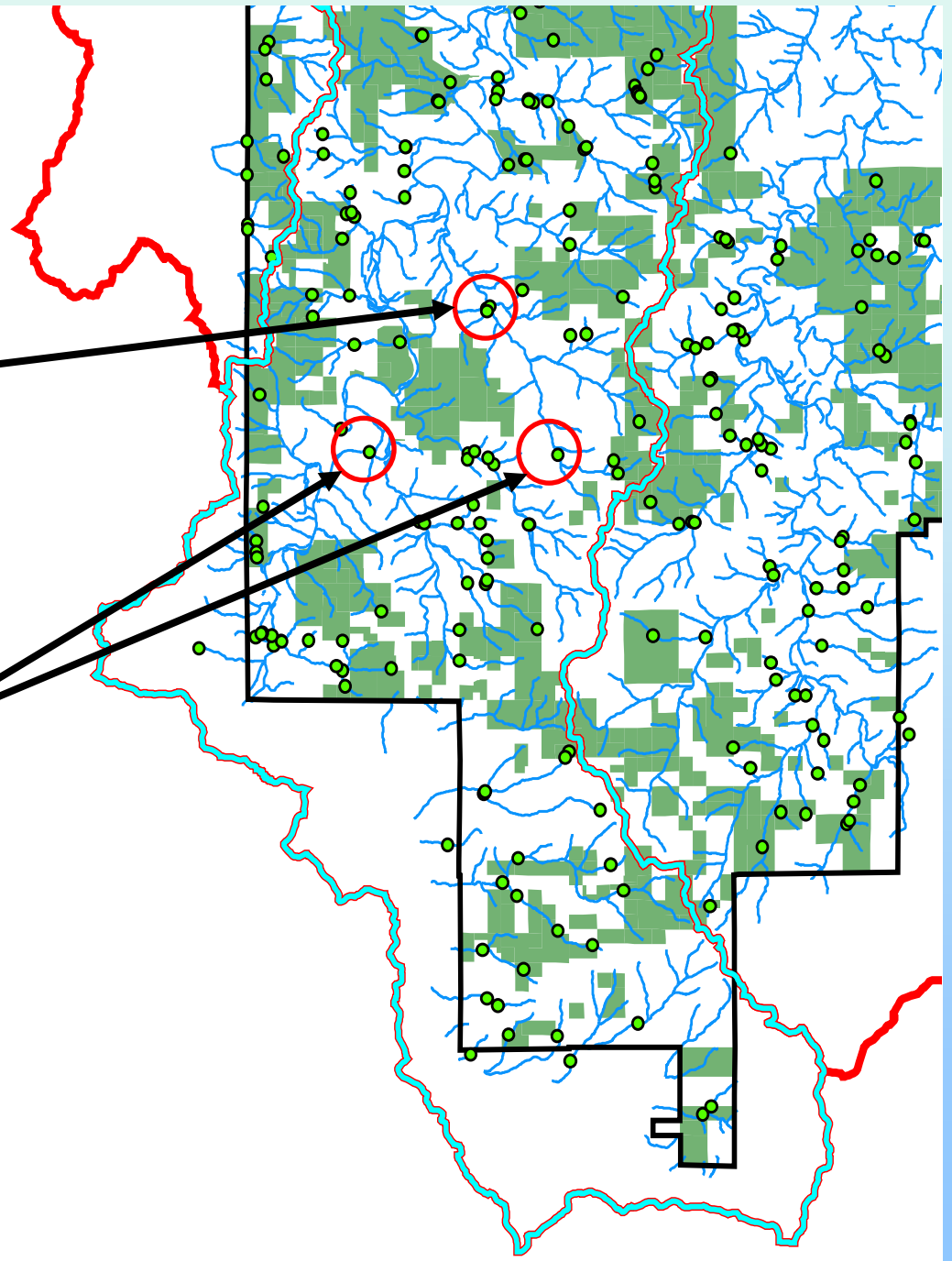
Not at all

Category weight 25.00% ?

Help << Back Next >> Calculate Cancel

combinations

single crossings



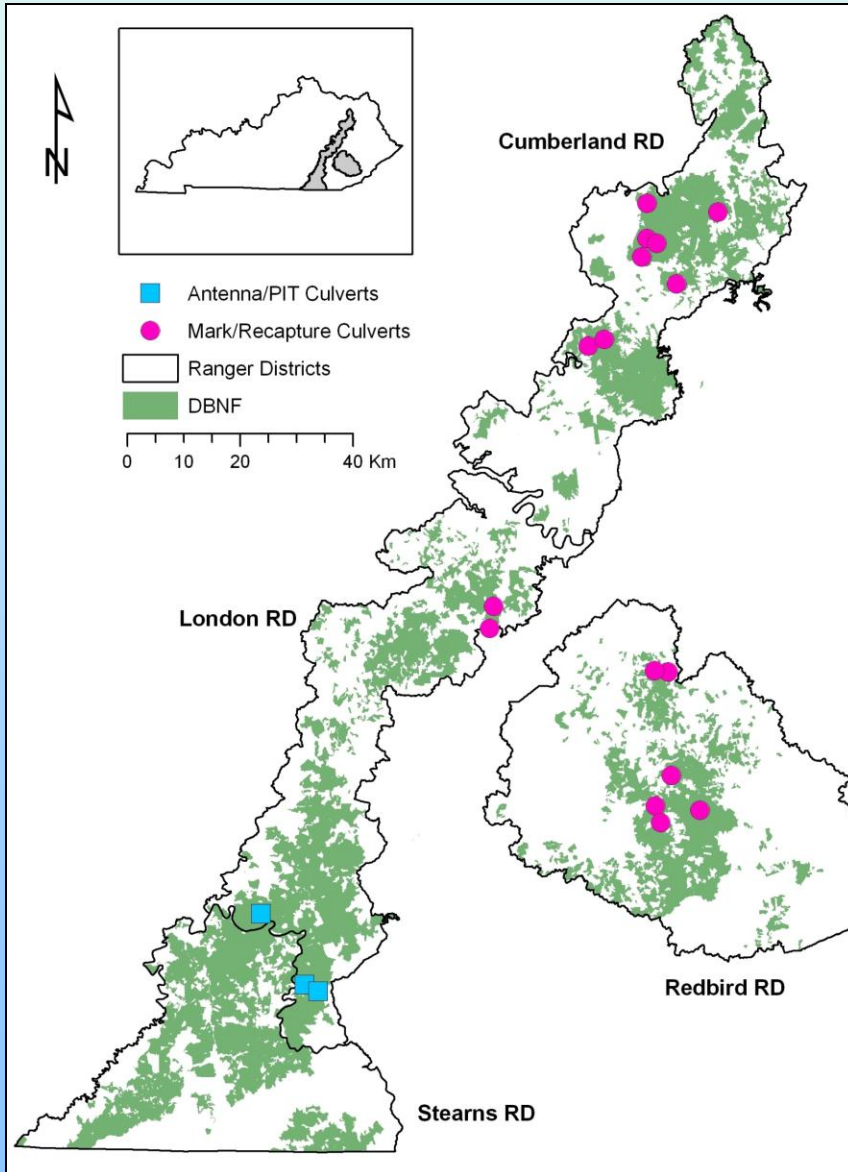
Validation Monitoring

Daniel Boone NF, KY, summer 2010



Project supported by San Dimas Technology Center, and Daniel Boone NF

Testing validation techniques



- Mark-recapture
 - 20 sites
 - all species
- Genetics (sib-ship)
 - 6 sites
 - 2 species
- PIT antennas
 - 3 sites
 - 2 species

Passage Easy



Dimensions: 12.5 x 7.5 ft

Backwatered: yes

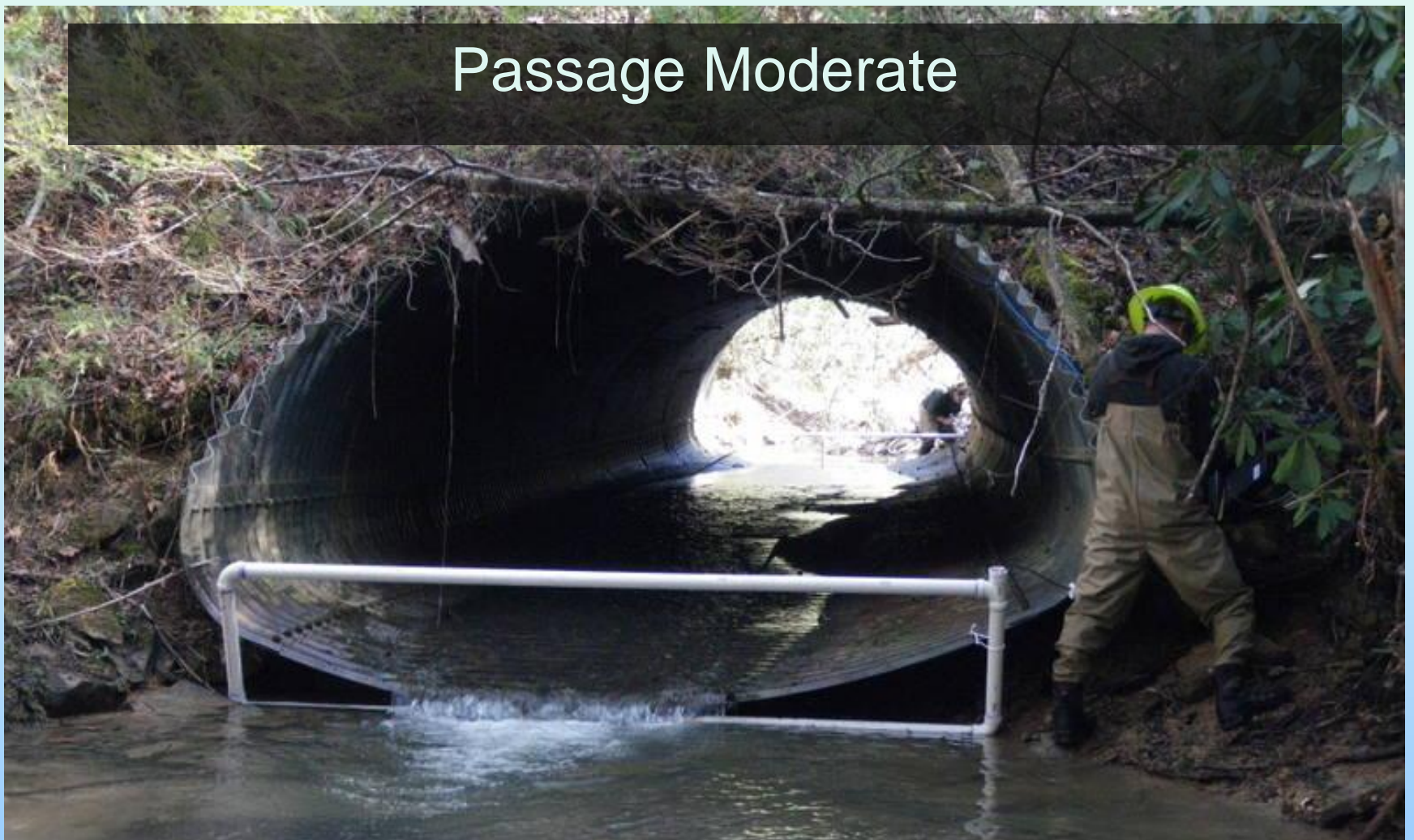
Substrate in pipe: yes

Outlet drop: 0 in

Slope: 0.2%

Length: 39 ft

Passage Moderate



Dimensions: 12 x 7.5 ft
Backwatered: no
Substrate in pipe: no
Outlet drop: 3.4 in

Slope: 1.2%
Length: 66 ft

Passage Difficult



Dimension: 13.5 x 8.5 ft
Backwatered: no
Substrate in pipe: no

Outlet drop: 18.9 in
Slope: 1.5%
Length: 77 ft

Creek chub

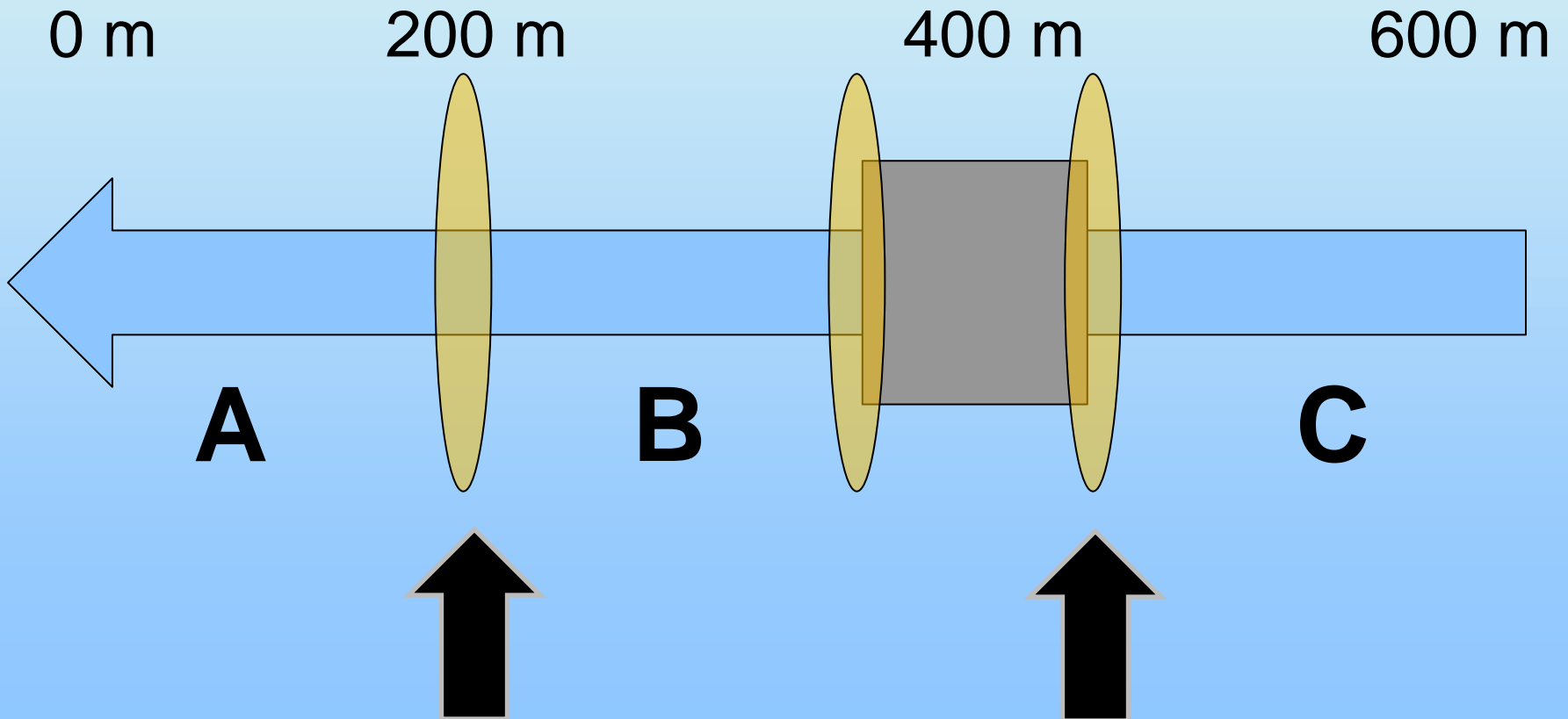
(Semotilus atromaculatus)



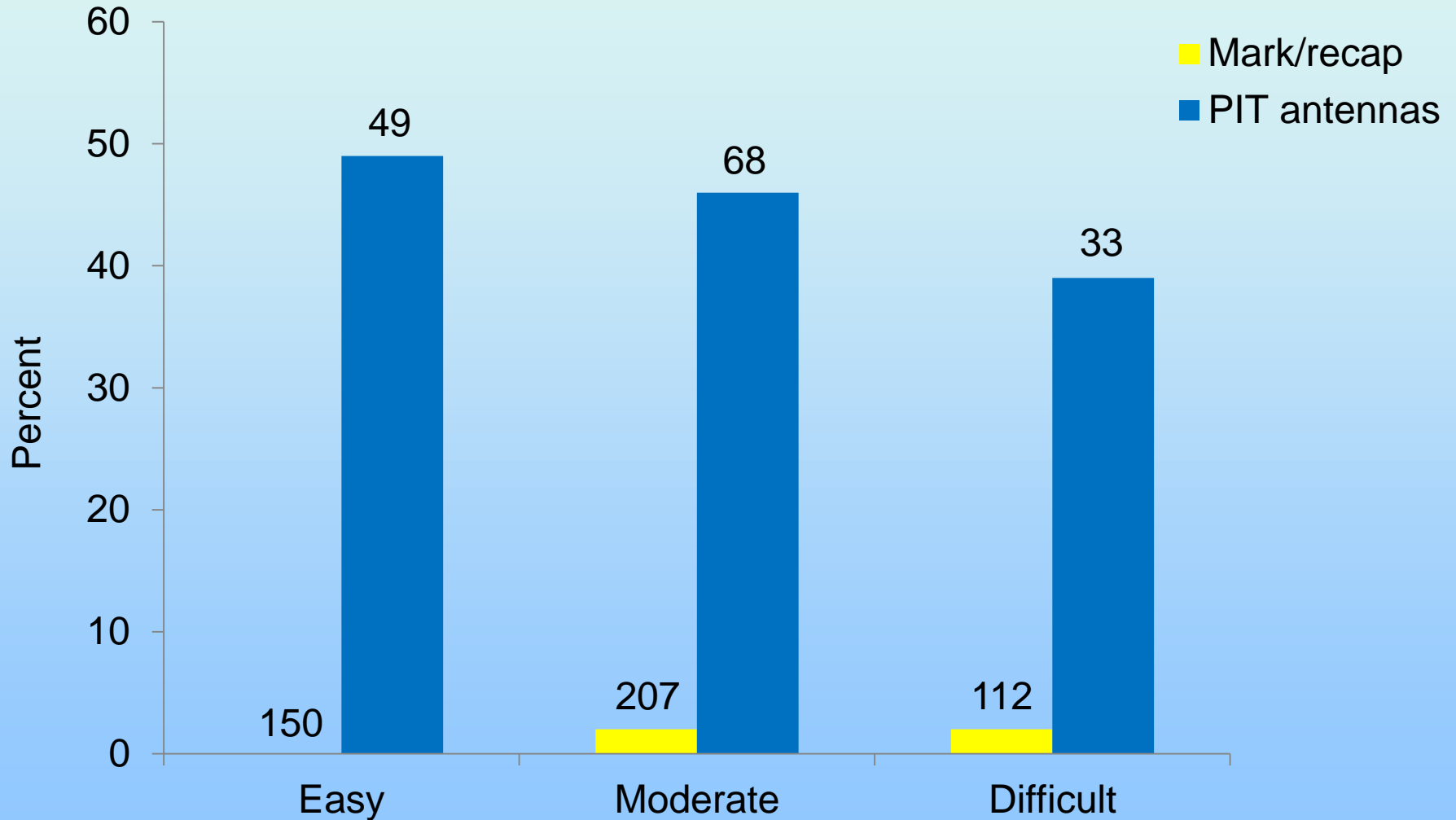
Photo by: Brian Gratwicke

Monitoring reach

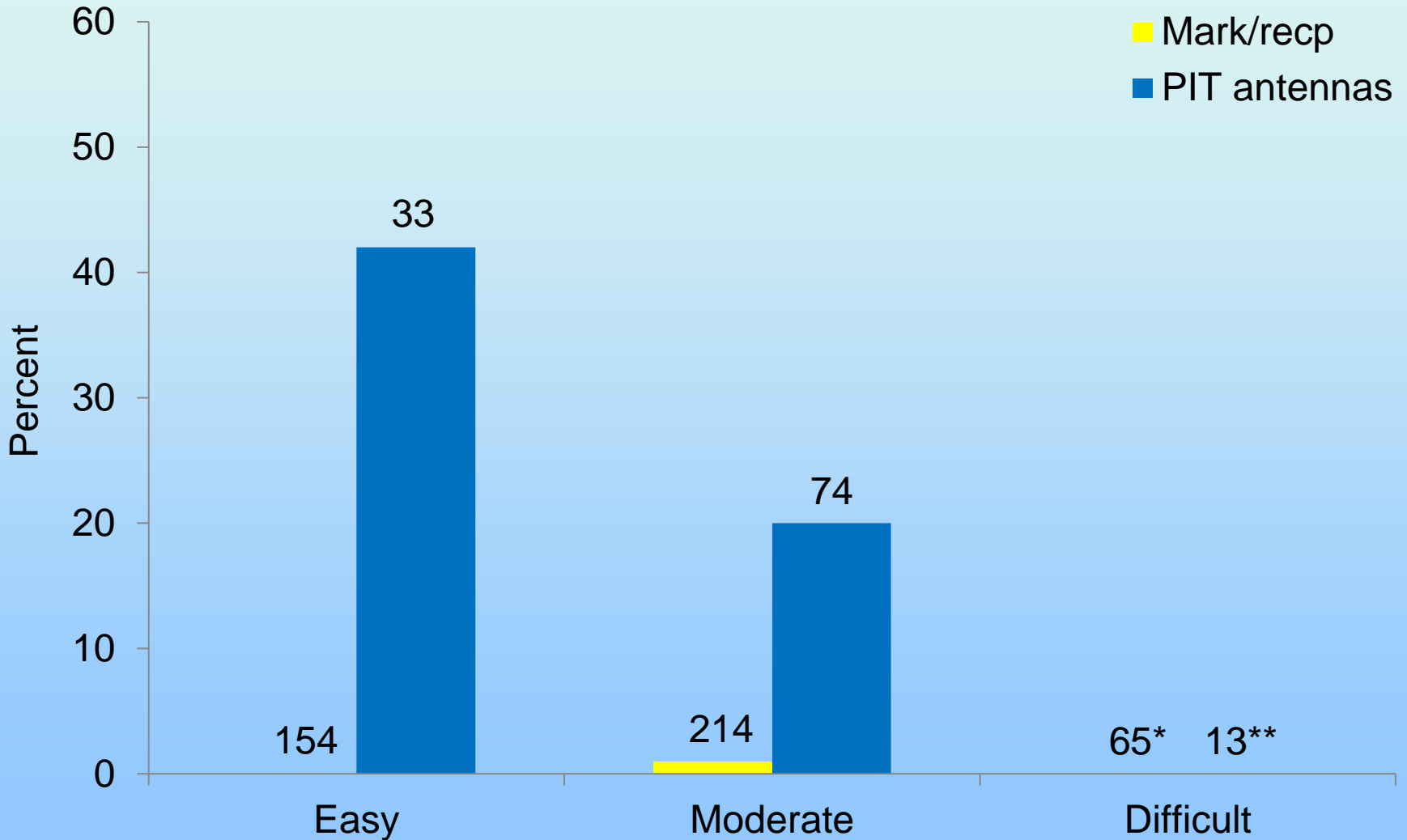
Daniel Boone NF, summer 2010



Chubs from reach A to reach B



Chubs from reach B to reach C



Validation Monitoring

- Mark-recap
 - Quick and easy
 - Light on results
- Antennas
 - Daunting implementation
 - Great results
- Genetics
 - Middle ground?
 - In progress



Summary

- Red, green, yellow is just a start
- Decision support in high demand
- There is no quick-and-easy validation



Craig Roghair
540 231-0078
croghair@fs.fed.us

<http://www.srs.fs.usda.gov/catt/>

