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

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

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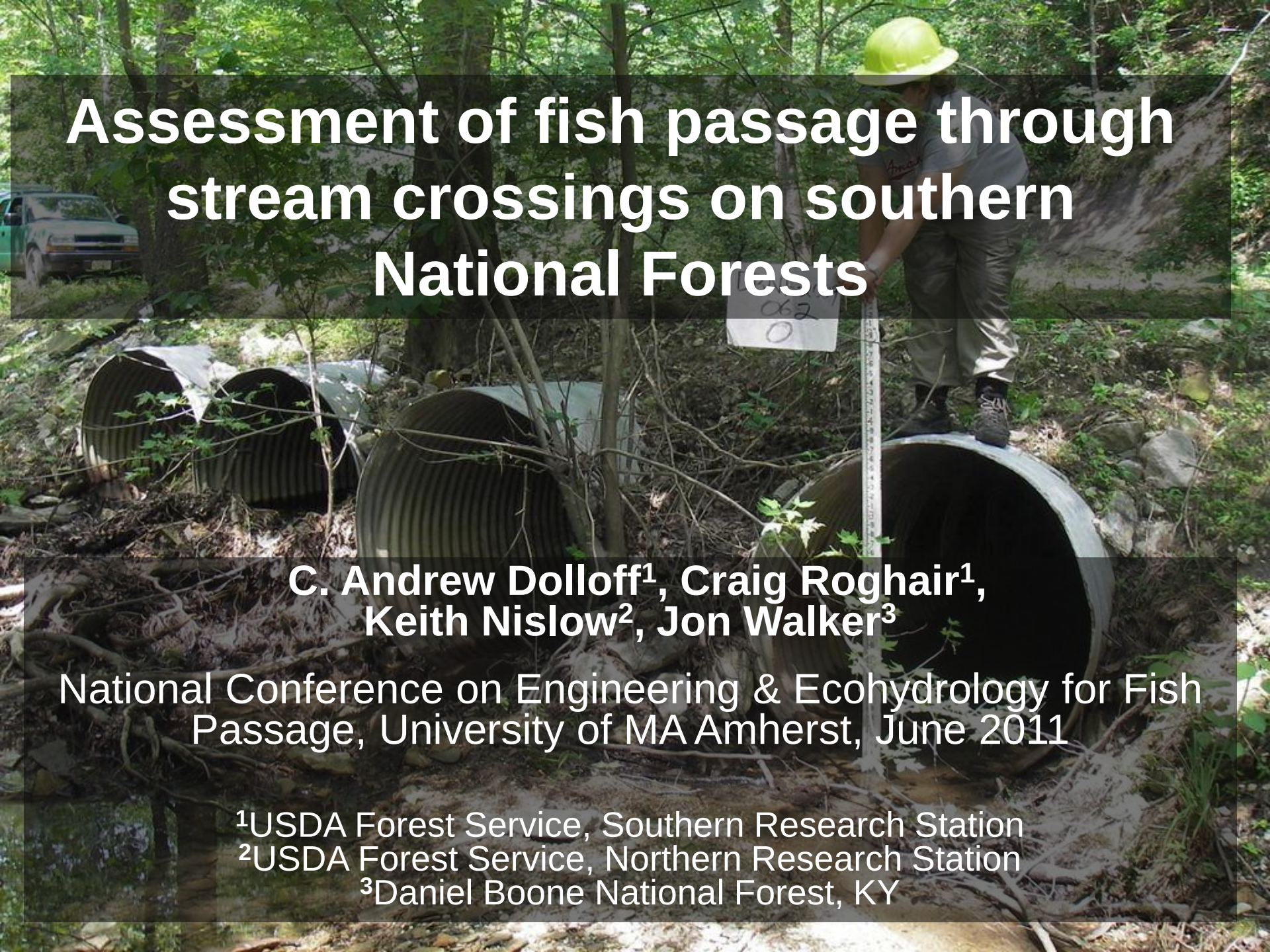
Daniel Boone National Forest

Assessment of fish passage through stream crossings on southern National Forests

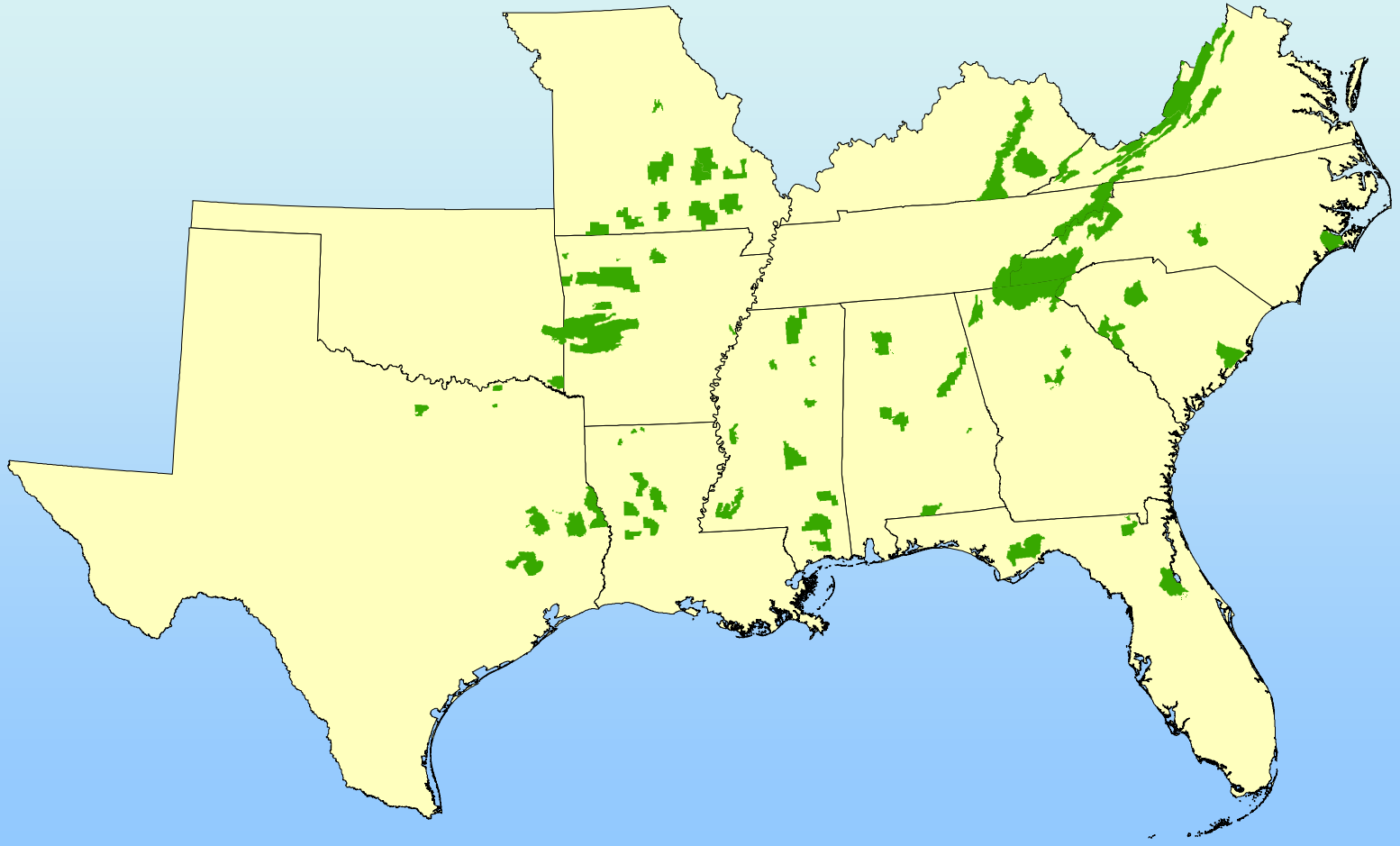


C. Andrew Dolloff[1], Craig Roghair[1], Keith Nislow[2], Jon Walker[3]

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

[1]USDA Forest Service, Southern Research Station
[2]USDA Forest Service, Northern Research Station
[3]Daniel Boone National Forest, KY

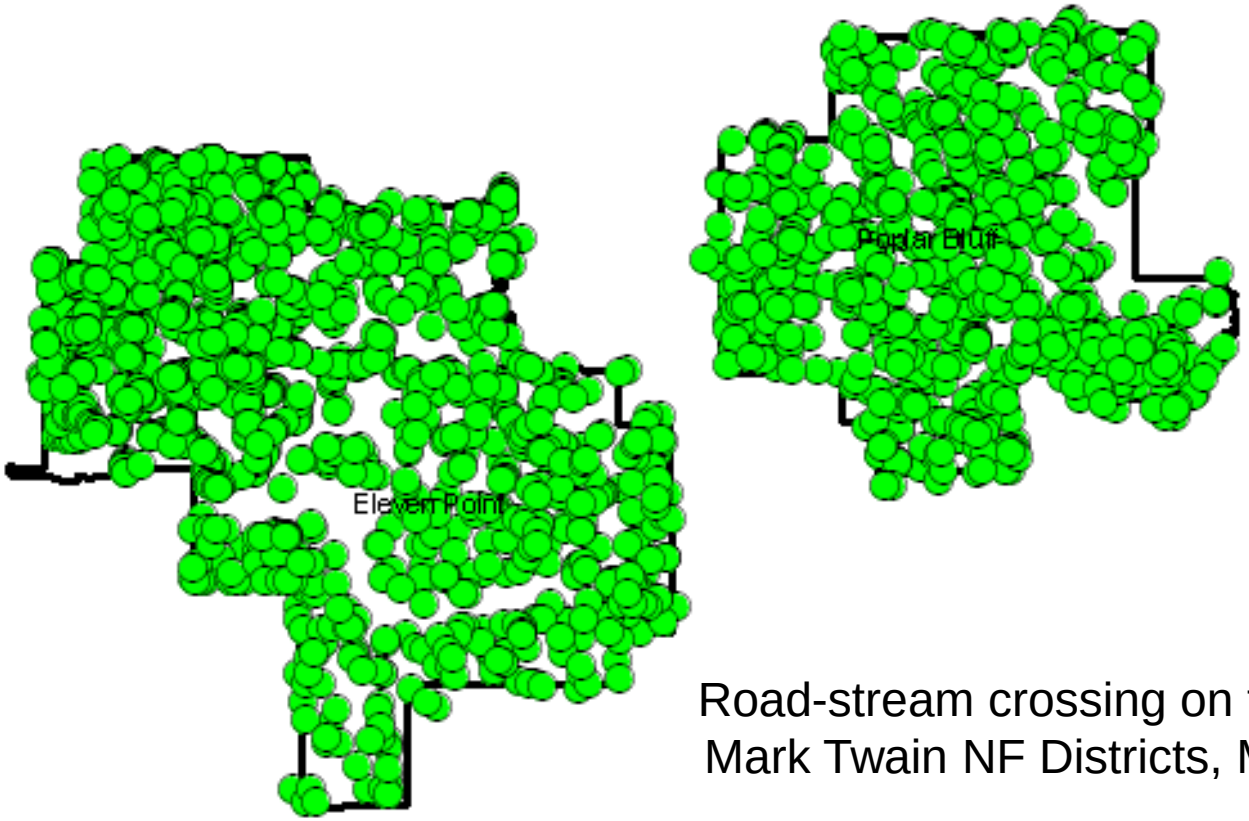
National Forests



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

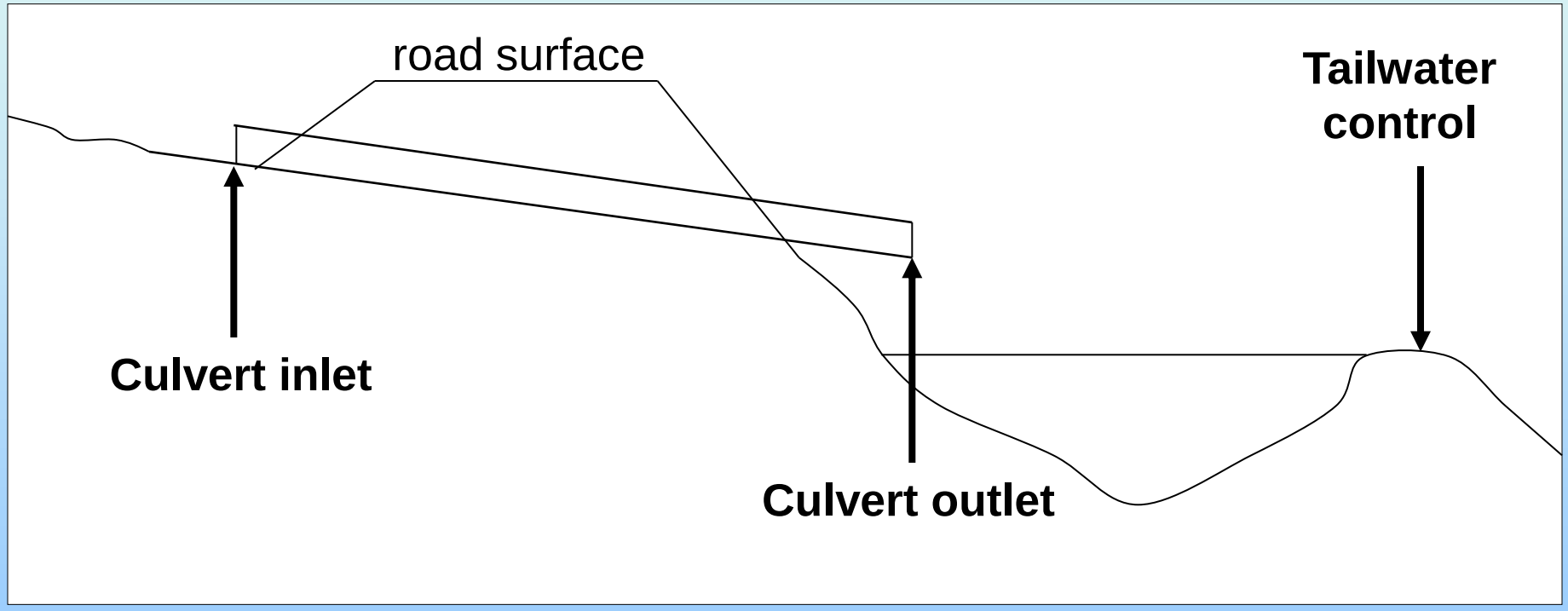


Road-stream crossing on two Mark Twain NF Districts, MO

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

Yes

No

Outlet Drop

< 24 in | ≥ 24 in

Pipe Slope

< 7.0% | ≥ 7.0%

Slope x Length

≤ 50 | > 50 & < 600 | ≥ 600

PASSABLE

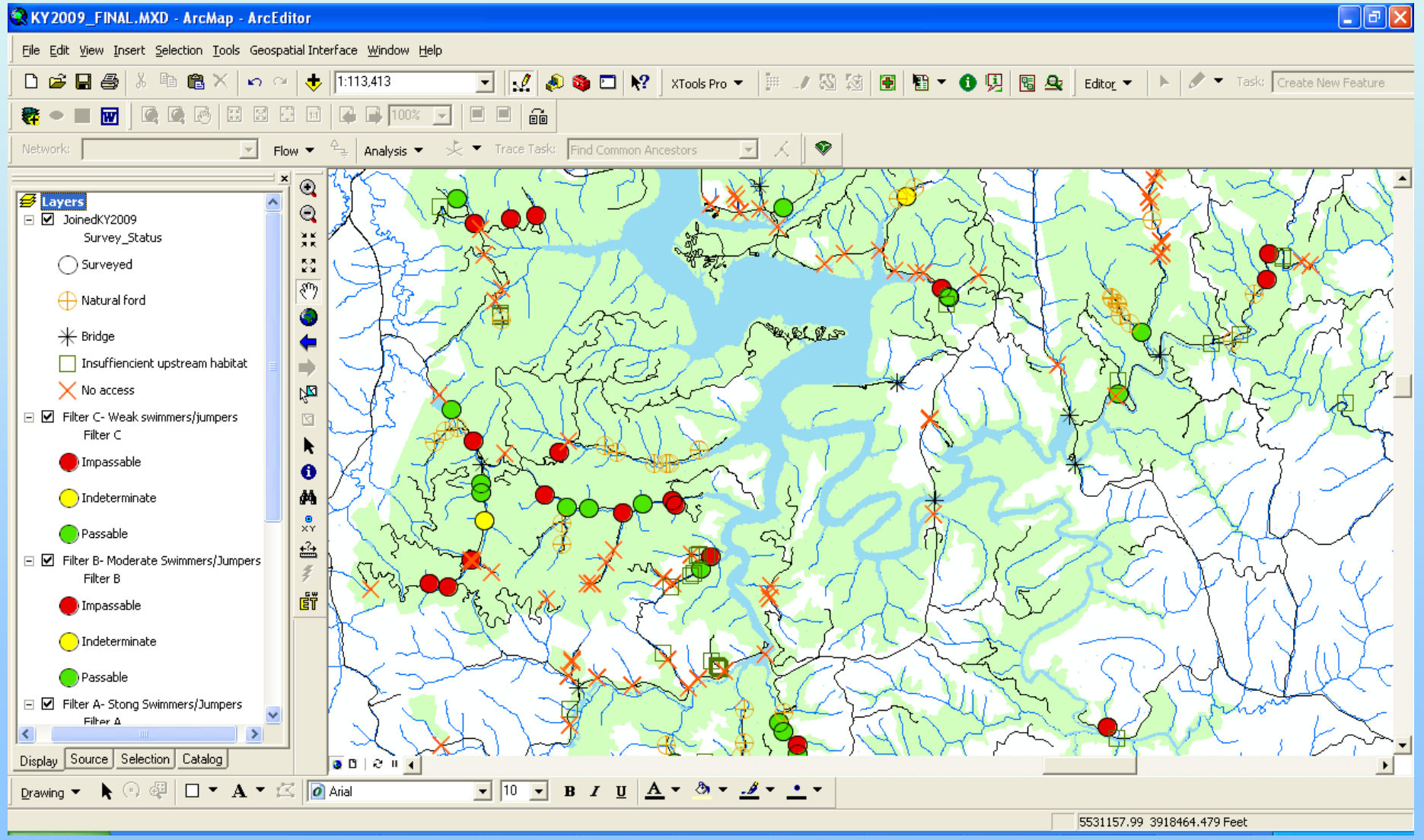
INDETERMINATE

IMPASSABLE

From Coffman 2005, James Madison University

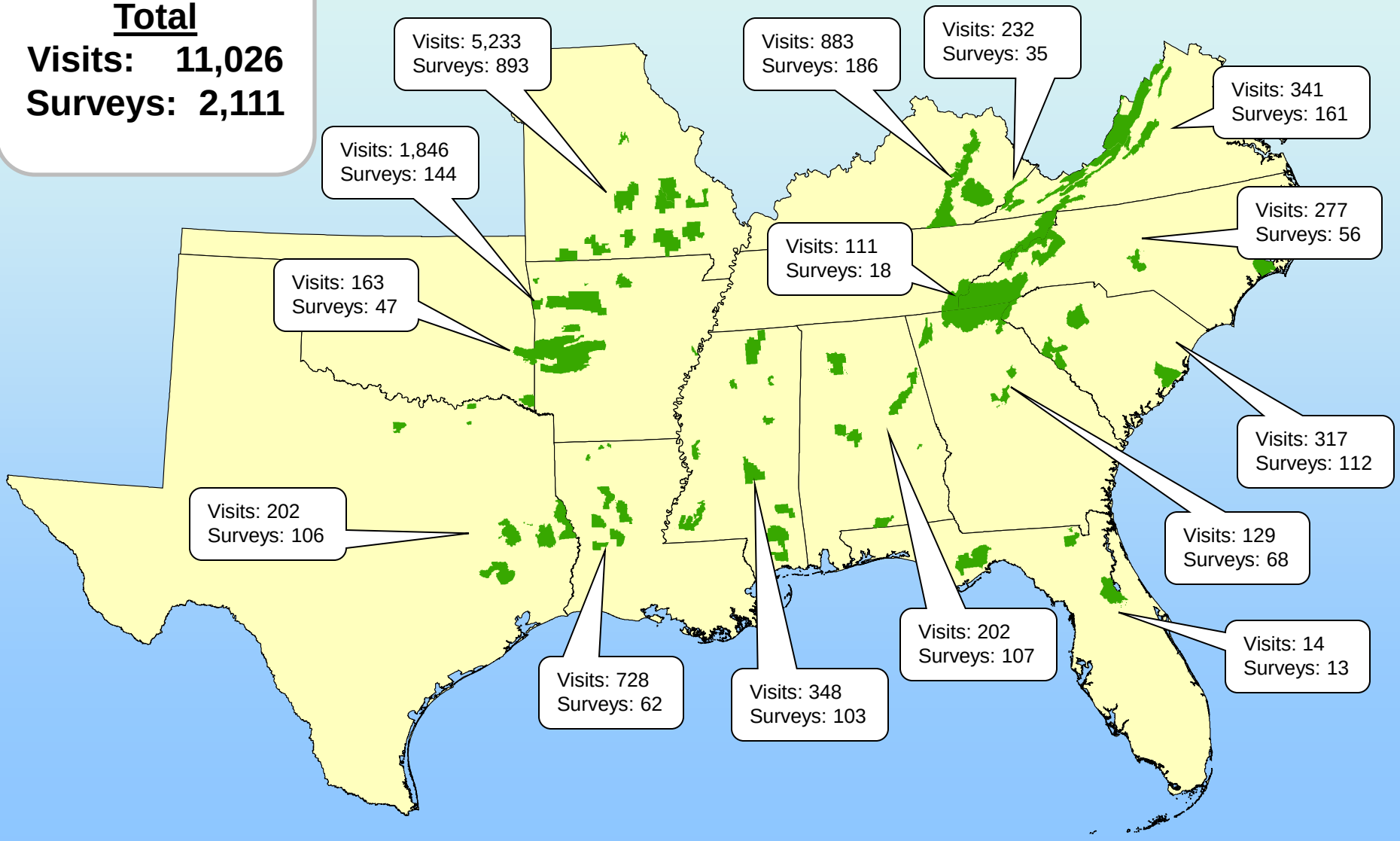
Standard Products

(GIS/databases)



CATT AOP 2005 - 2010

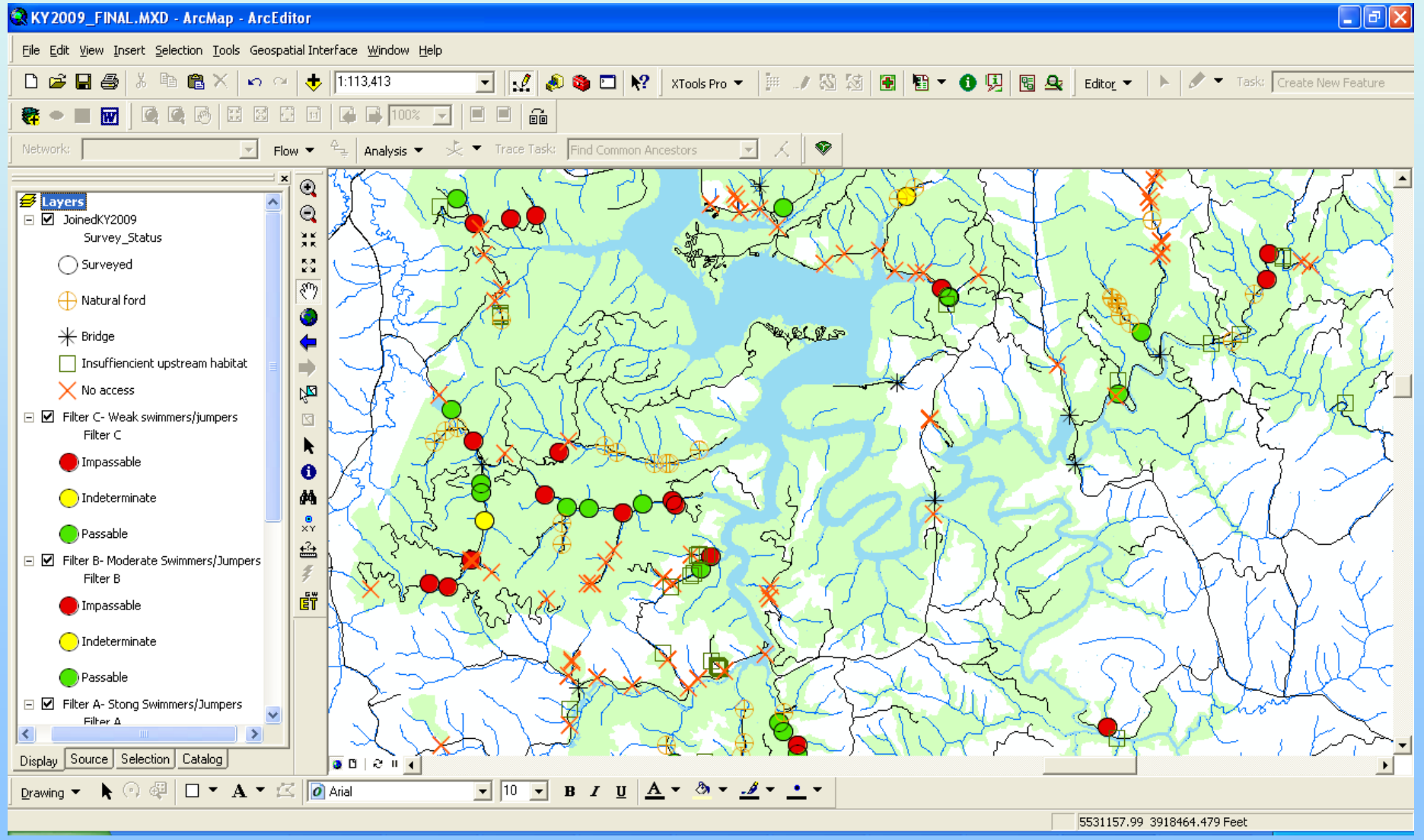
Total
Visits: 11,026
Surveys: 2,111



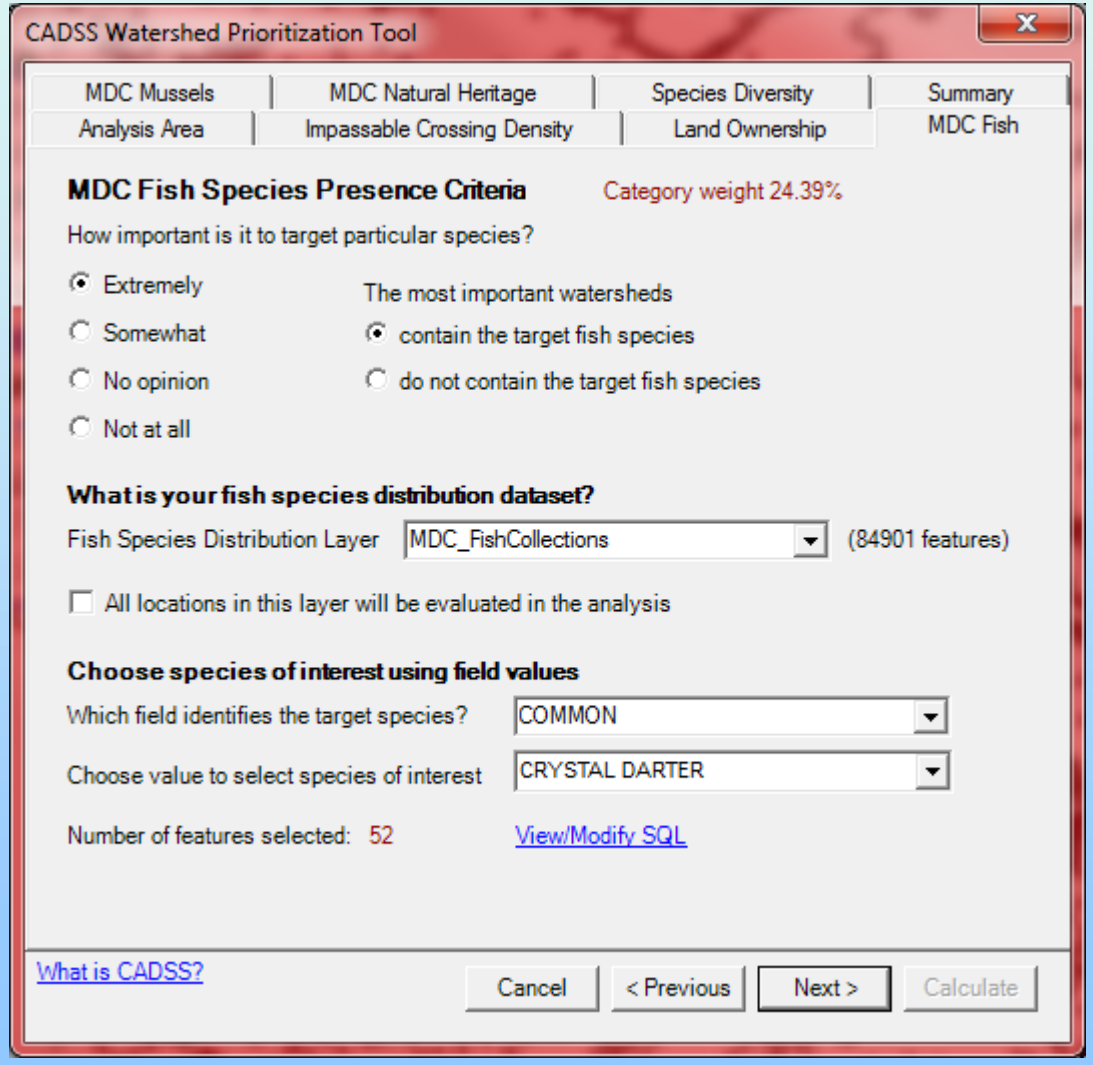
Lessons Learned

Decision support

Where do I start?

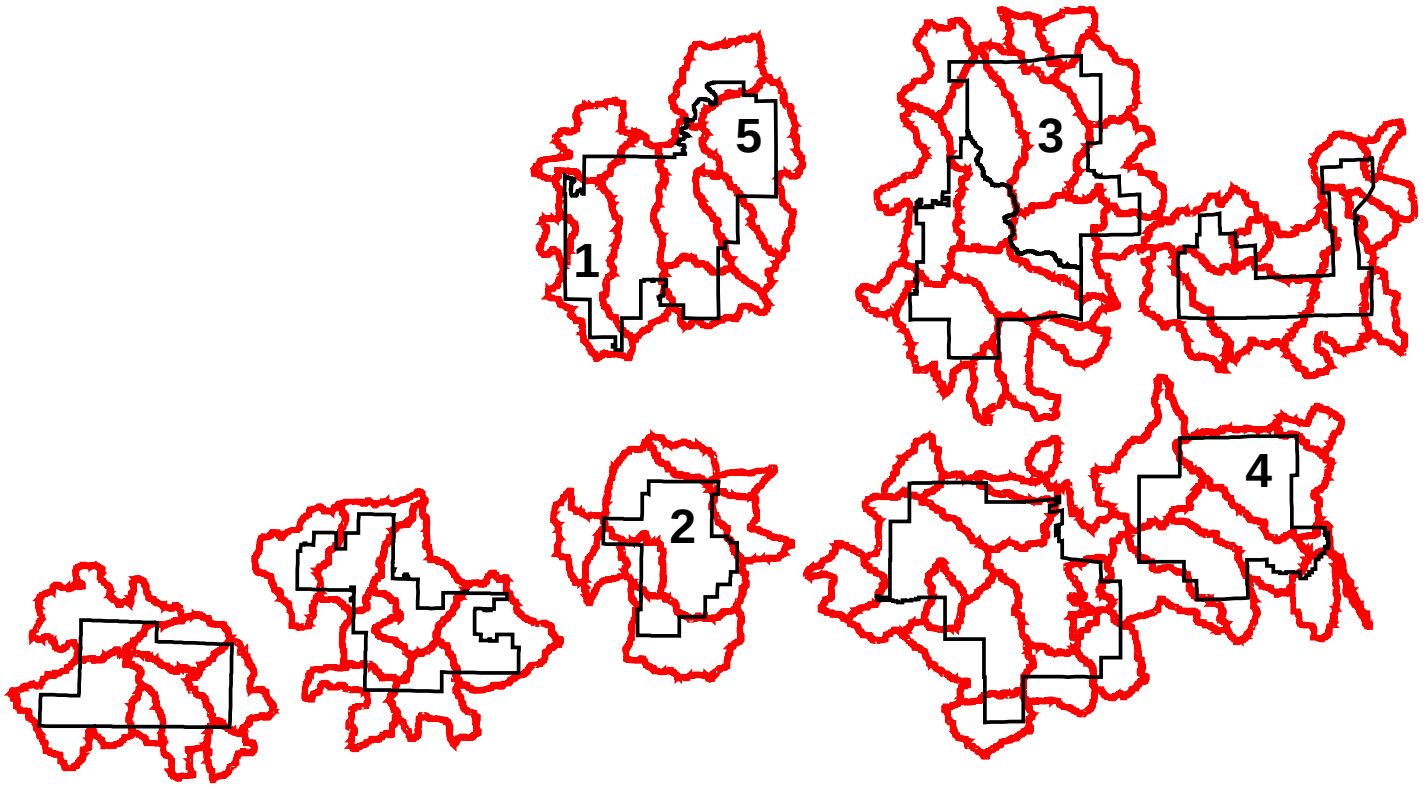


Watershed Prioritization

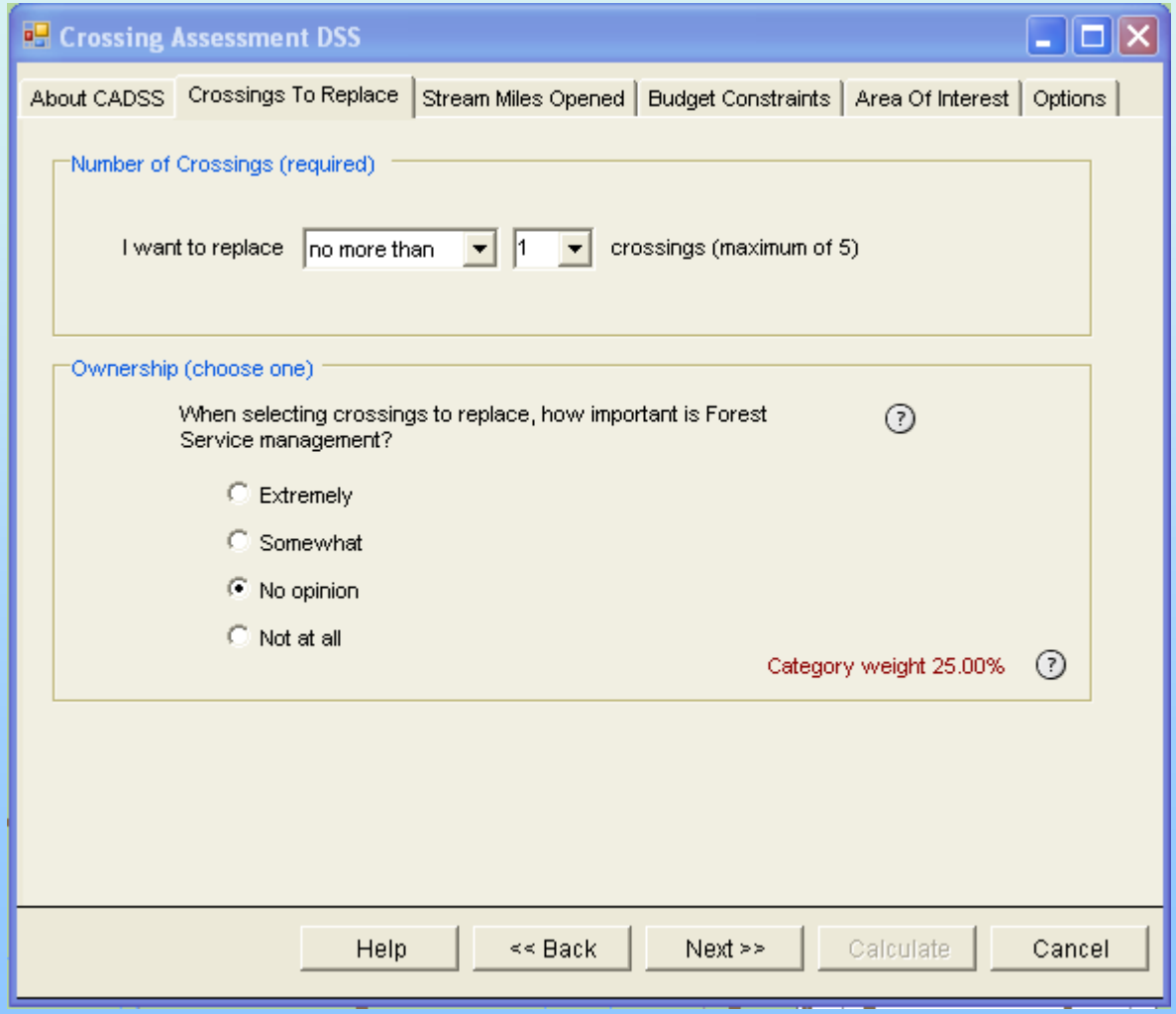


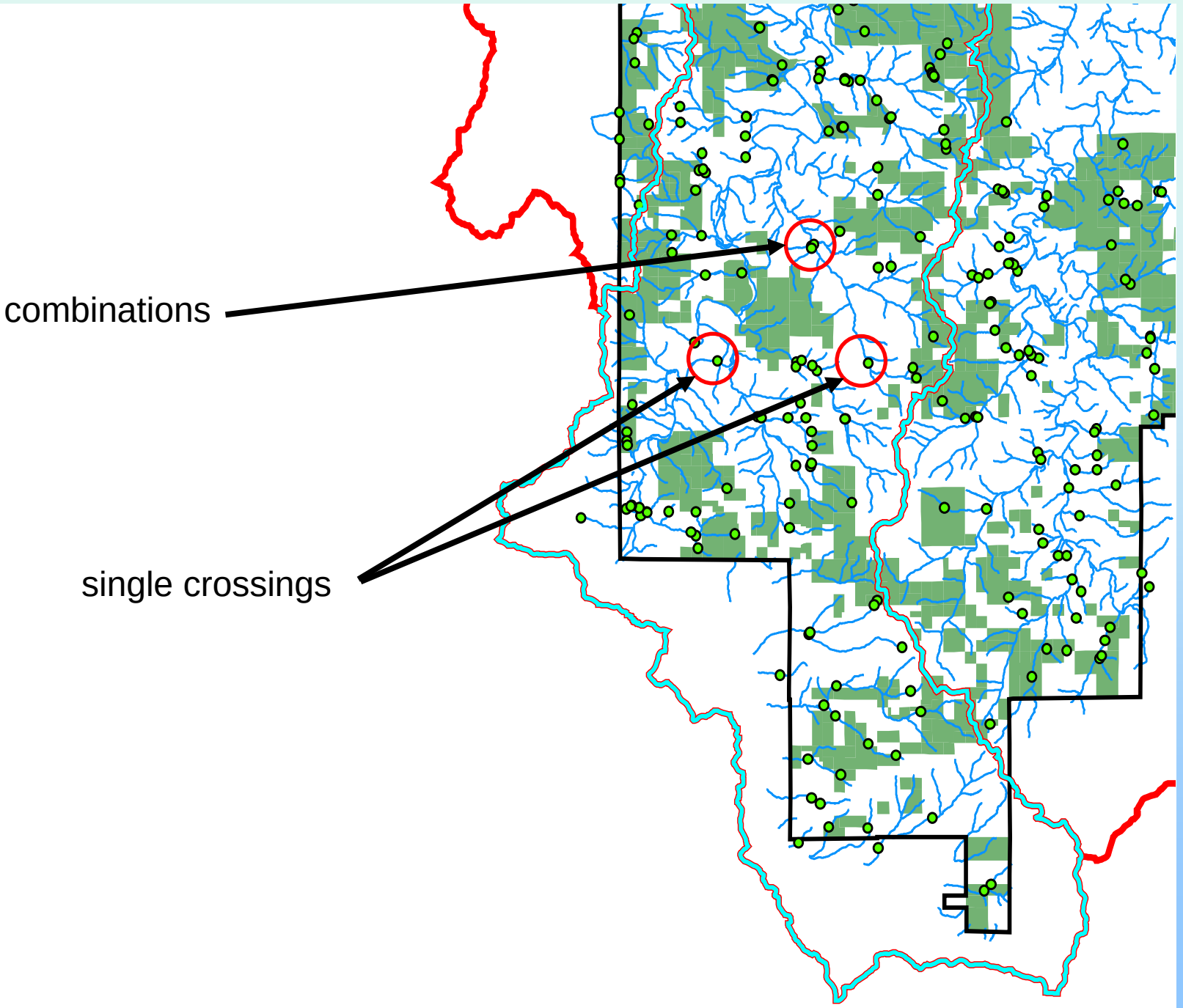
CADSS tool developed by Conservation Management Institute, Virginia Tech

Watershed Prioritization



Crossing Prioritization



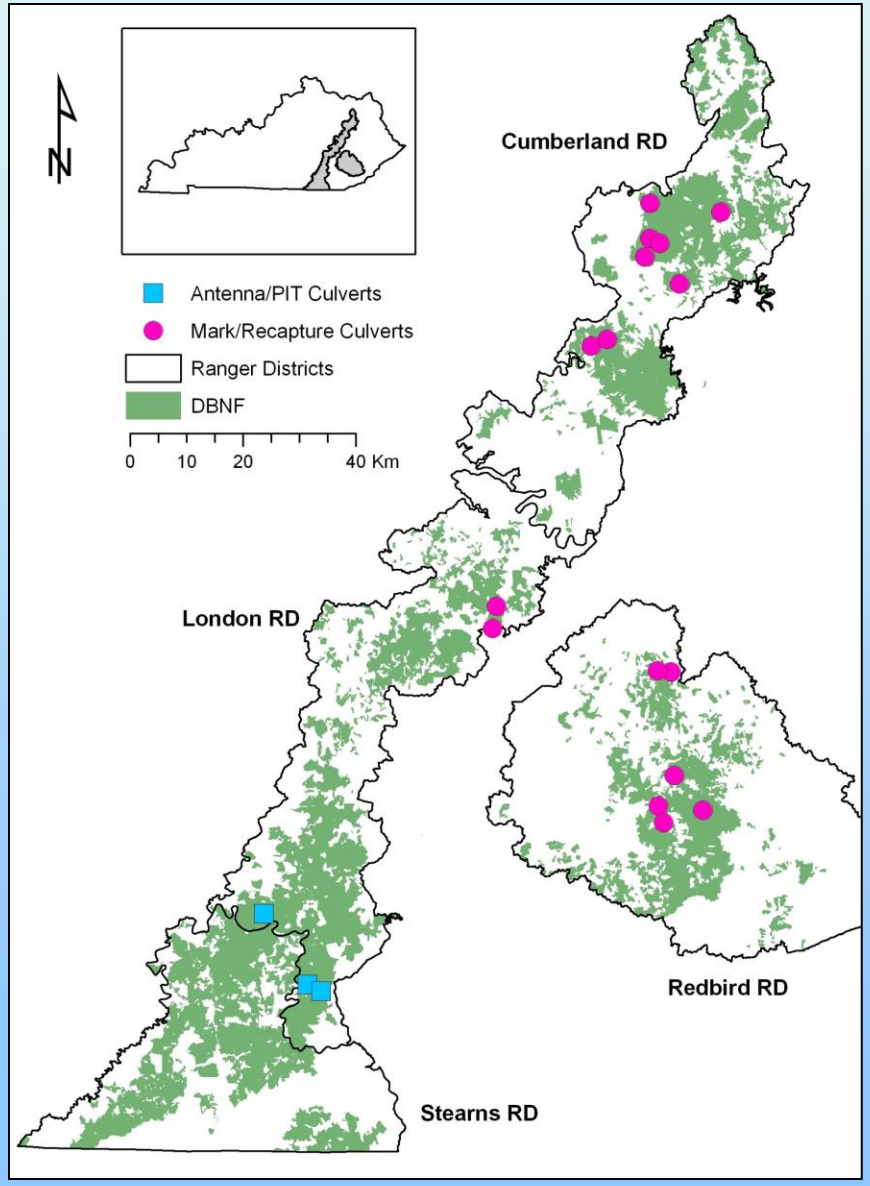

combinations
single crossings

Validation Monitoring

Daniel Boone NF, KY, summer 2010

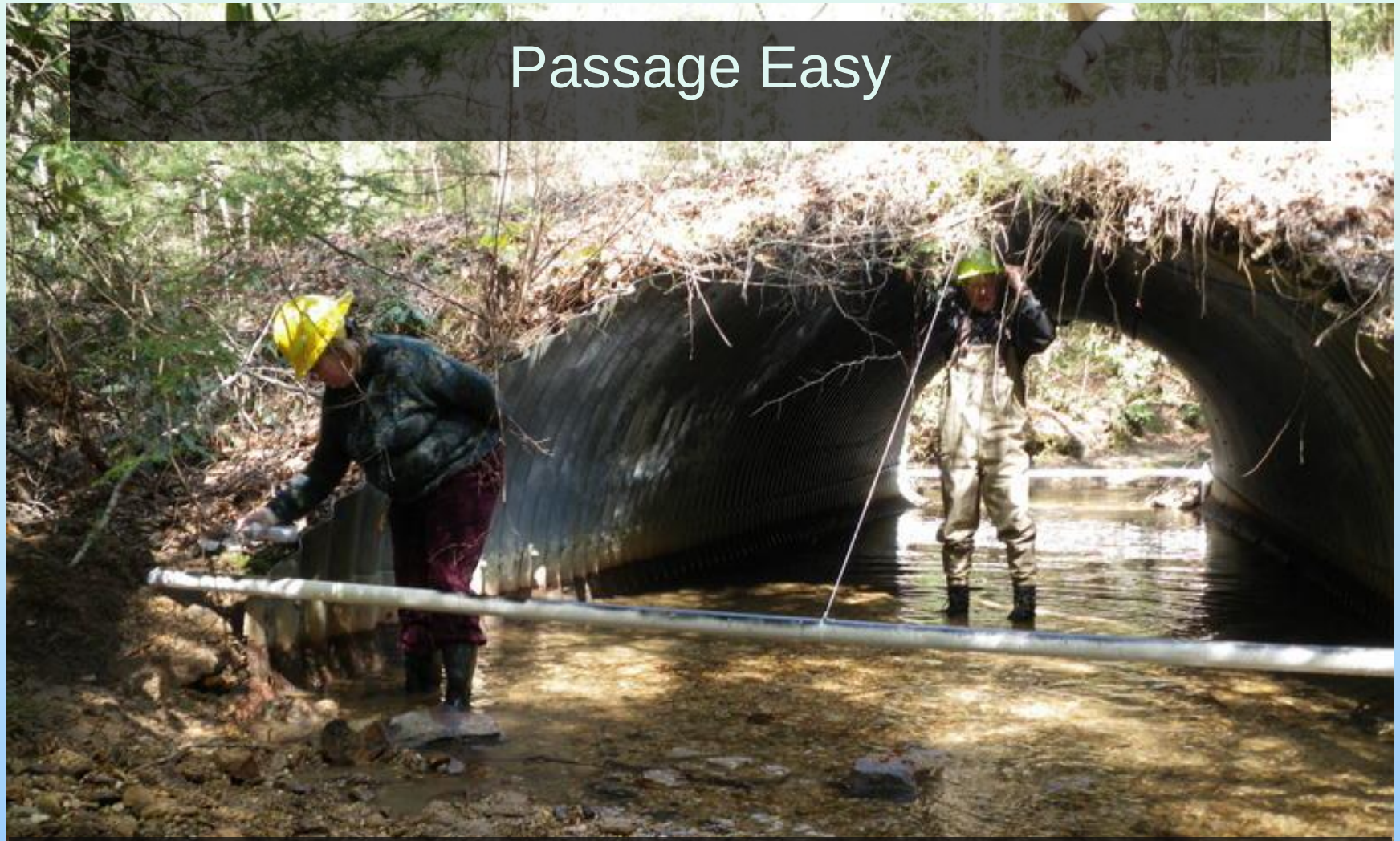
Project supported by San Dimas Technology Center, and Daniel Boone NF

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

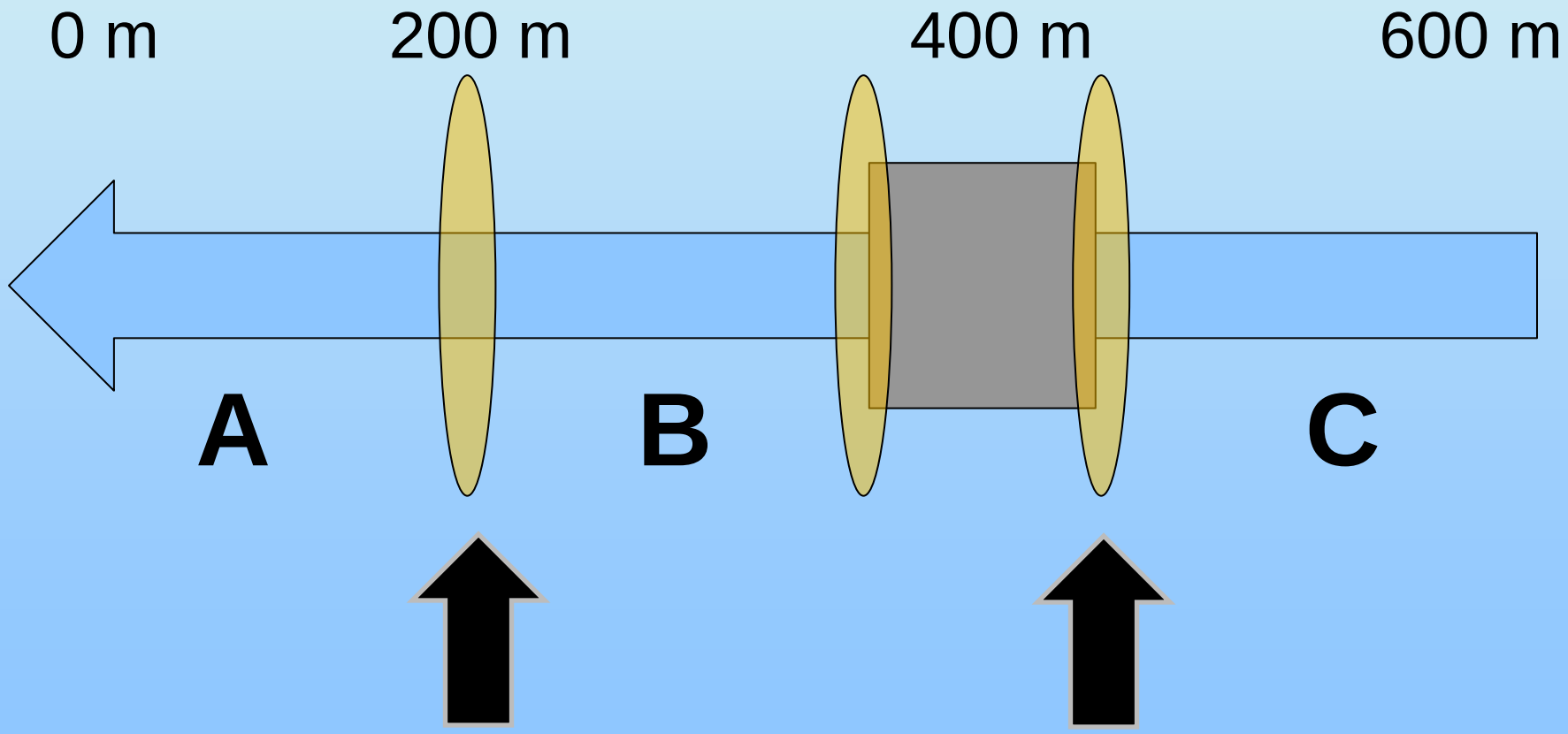
Dimension: 13.5 x 8.5 ft
Backwatered: no
Substrate in pipe: no

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

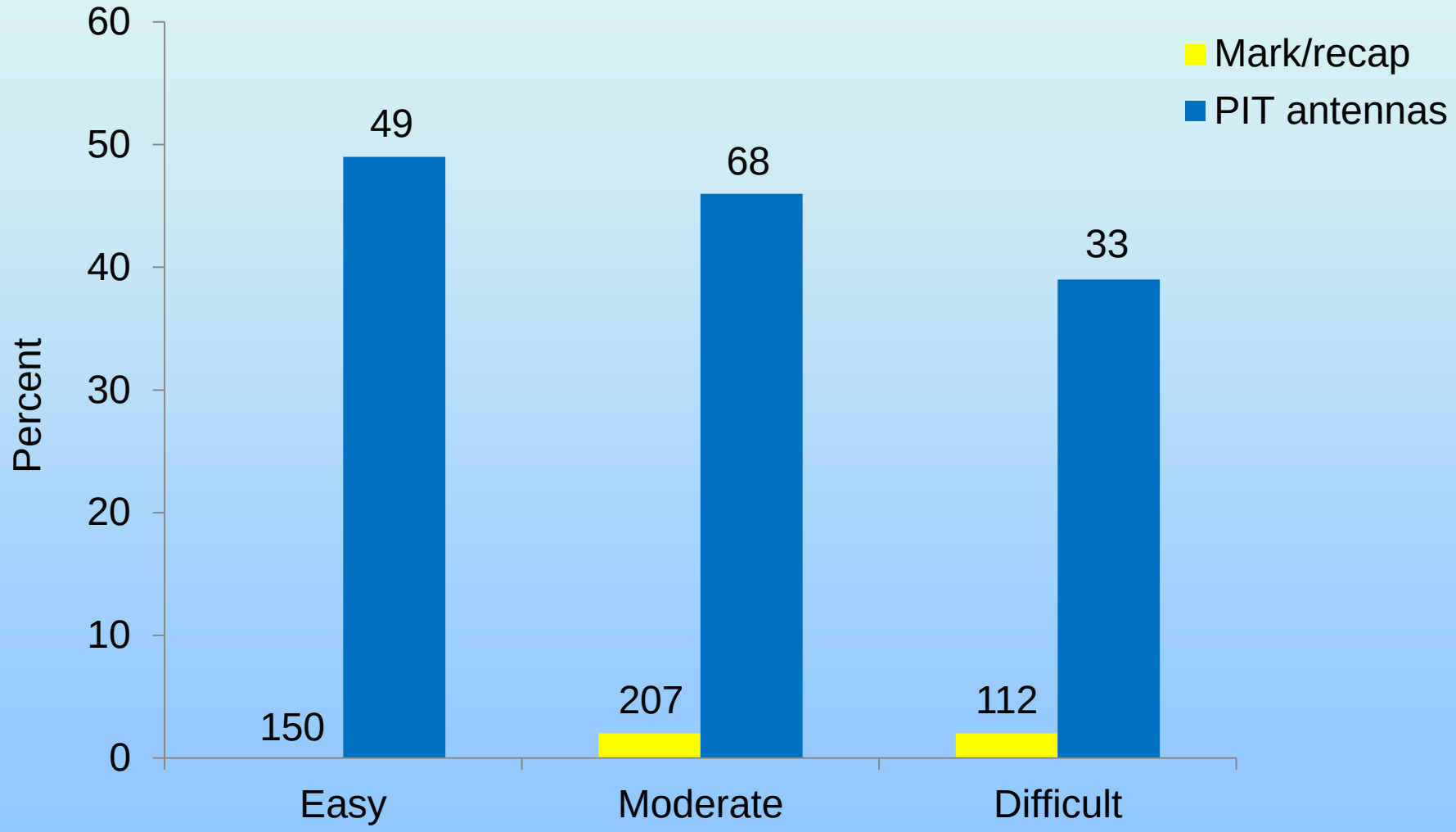
Creek chub
(Semotilus atromaculatus)

Monitoring reach

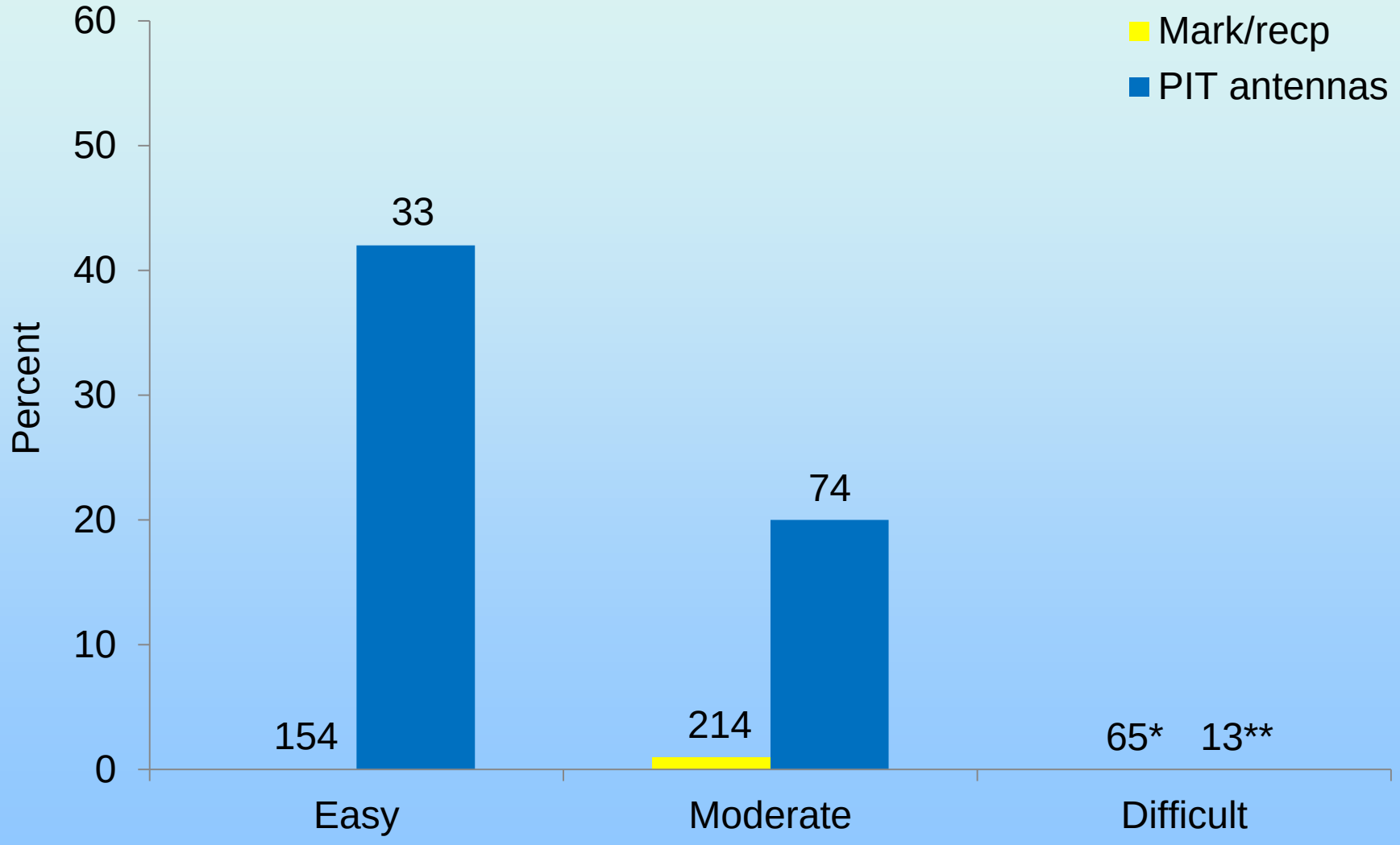
Daniel Boone NF, summer 2010



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