WOODY STRUCTURE AS SHORELINE PROTECTION

Quita Sheehan, Conservation Specialist,
Vilas County Land & Water Conservation Department

WHY IS WOODY STRUCTURE IMPORTANT IN LAKES?

- Developed lakes in Vilas County have substantially less littoral large woody debris than undeveloped lakes

WHY WOODY STRUCTURE AS AN EROSION CONTROL TOOL?

- Another tool to address shoreline erosion
  - Riprap only option for High Energy Lakes
  - Biologs only option for Moderate energy lakes have not always been successful

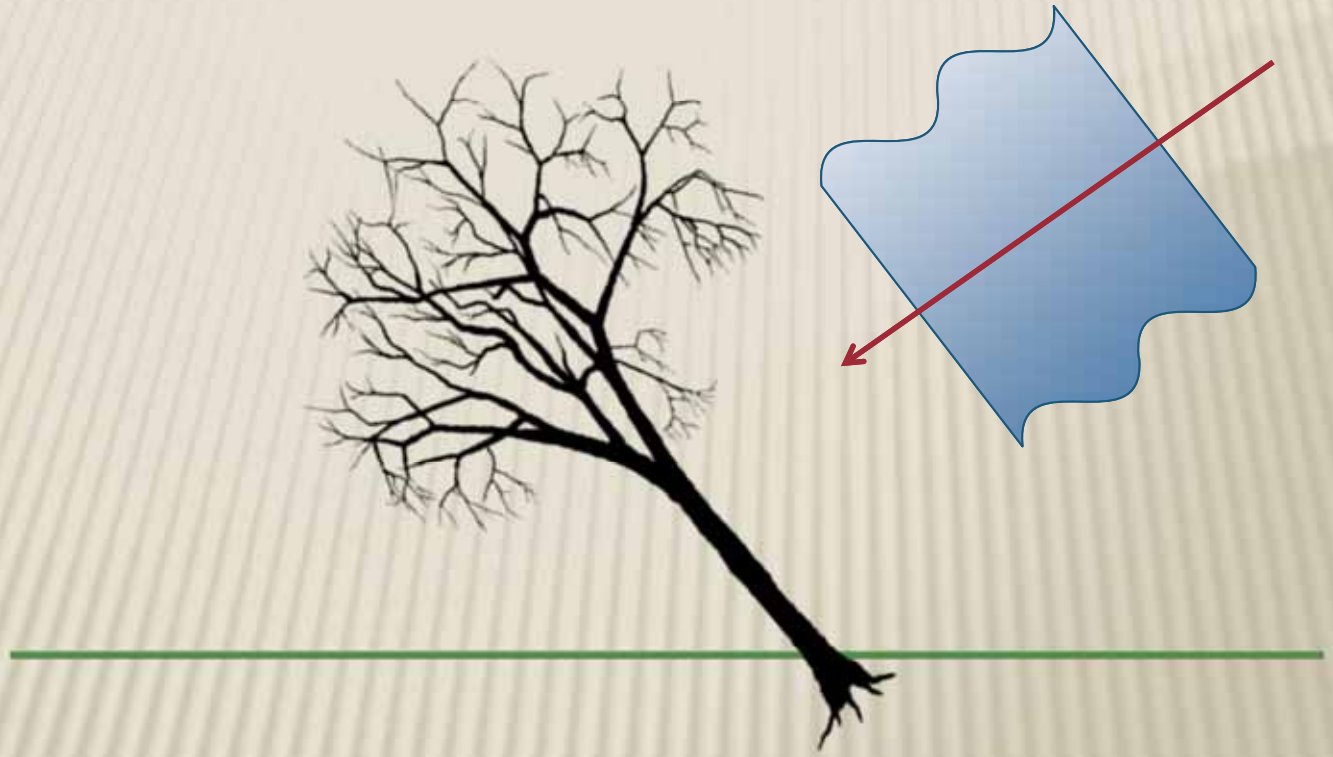
THE GOOD WOOD PILOT STUDY PROPOSAL:

- Install tree drops to
  - Identify the most effective tree drop structure that will provide shoreline protection from wave induced erosion
- Set up demonstration sites
- Partner with public land management agencies, lake associations, and interested private land owners

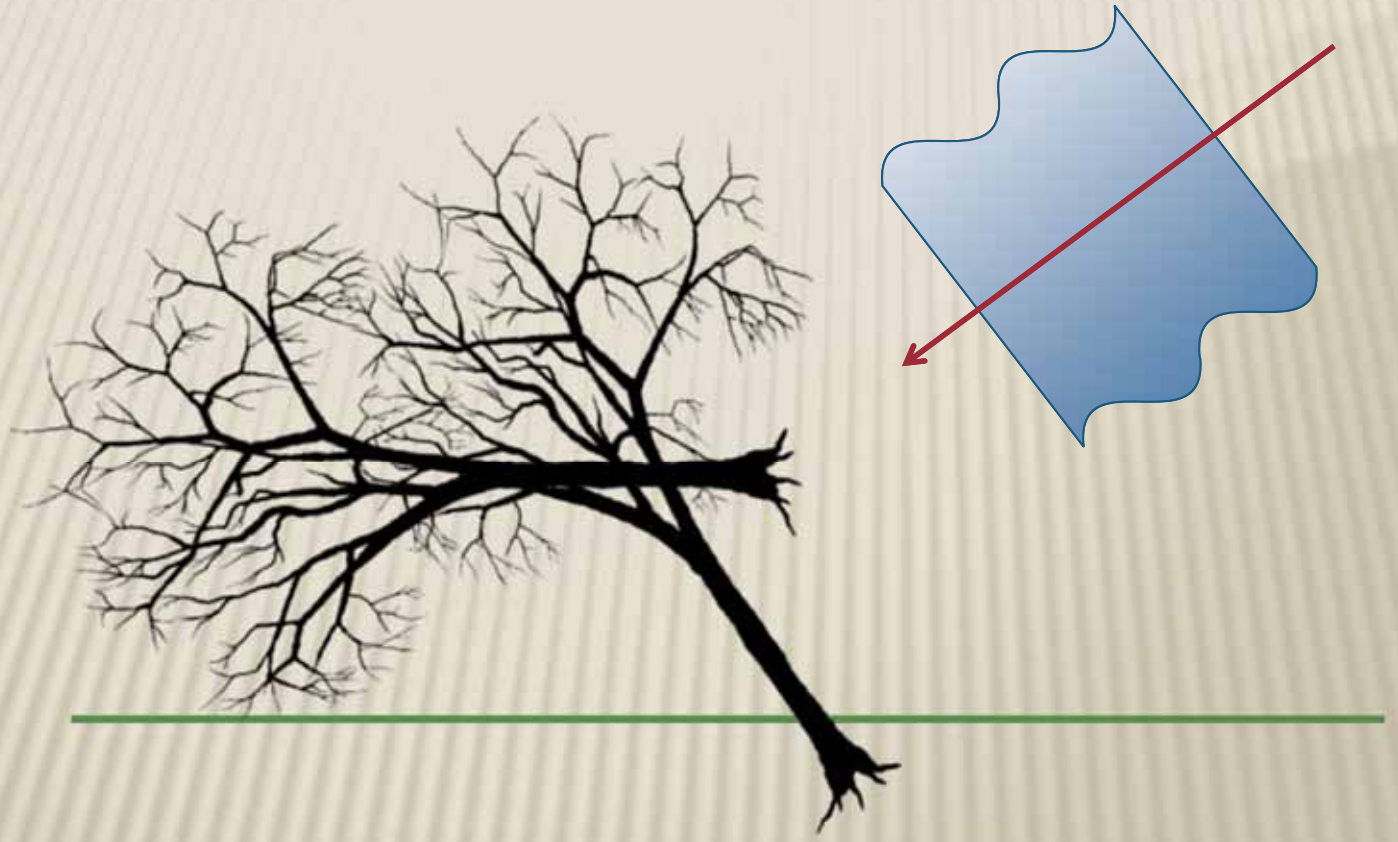
OBJECTIVES OF PILOT STUDY

- Test hypothesis – “Littoal large woody debris protects shorelines from wave created erosion”
- Develop study methods
- Encourage research with statistical vigor
- Start conversation about the use of tree drops as a tool to protect shorelines from wave induced erosion
  - Create public demonstration sites to change public attitudes towards LWD
  - Change DNR regulations to allow for the use of LWD as a tool against erosion

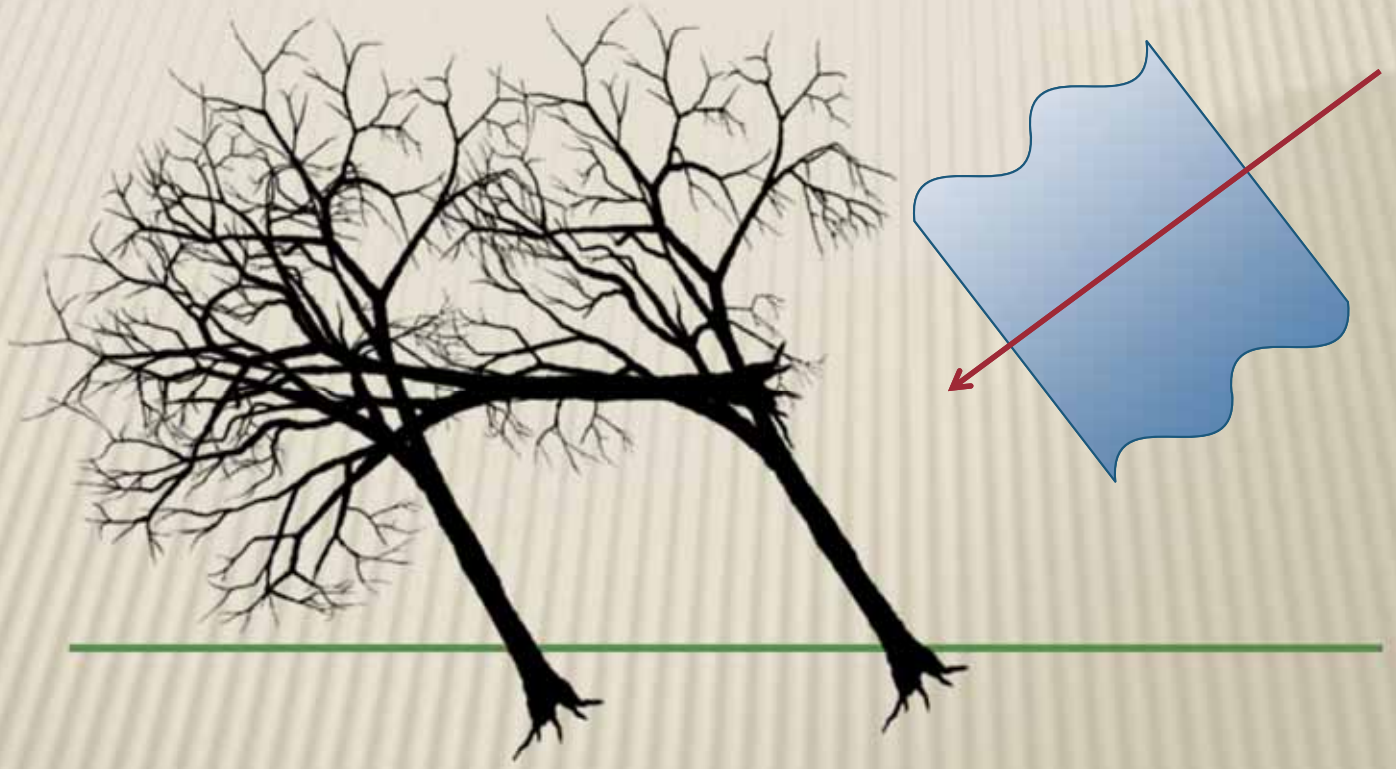
ONE TREE



TWO TREES



THREE OR MORE TREES



SITE CHARACTERISTICS

- Access
  - Public lands so people can walk/wade to installations
  - Private lands easily viewed by boat
  - Within proximity to candidate trees
- 3-5 iterations of each treatment (1, 2, or more trees)

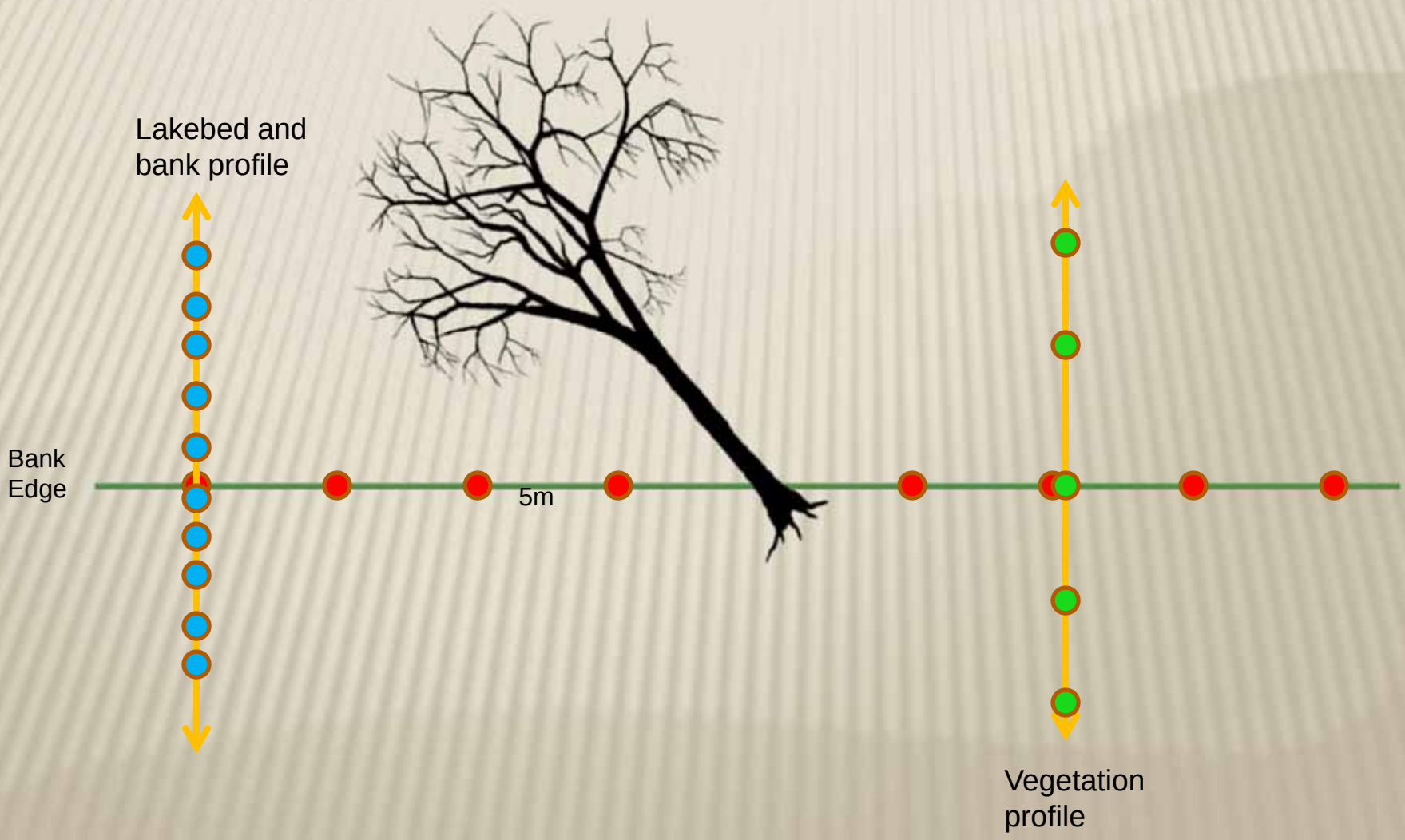
TREE PLACEMENT

- Minimum 1ft of trunk seated into the bank
- Angled towards shore, based on prevailing wind direction
- Minimum of 6ft of bole exposed at the OHW
- Top of tree #1, or trunk of tree #2 resting on lake bed if possible

TREE PLACEMENT (CONT)

- Anchors
  - Duckbill or screw anchor
  - Minimum of 3ft depth of anchors (NRCS code)
  - Check every spring

STUDY LAYOUT



MEASUREMENTS

- 3 visits
  - Pre-installation, after 1 growing season, and after 2 growing seasons
- Profile lake bank and littoral zone along transects 5m apart, starting at center of LWD structure, for 15 to 20 m either side
- Soil deposition – still not sure how to characterize this?
- $1m^2$ quadrats (how many per transect?)
  - Vegetation: percent cover, species diversity

MEASUREMENTS

- Landowner Survey - pre and post installation
  - Recreational use by landowners, neighbors and lake users
    - Type and intensity of recreation
  - Attitude of landowners and neighbors to structure over time

OUTCOMES

- Produce enough data that:
  - Researchers are inspired to purse the study
  - Demonstration sites are visited by the public
  - Encourage some landowners to maintain or install woody structure on their shorelines
  - Encourage the use of woody structure by other shoreline restorers
  - If successful, experimental uses of woody structures are permitted as a technique to address shoreline erosion

QUESTIONS, SUGGESTIONS, DISCUSSION