National Rivers and Streams Assessment: Nonwadeables

SARAH LEHMANN, US EPA

Overview

- Background
- Methods – some differences between wadeable and nonwadeable methods used in NRSA
- Draft Assessment Results

- Thanks to Many, Many Partners!

National Rivers and Streams Assessment Background

t nationally-consistent, statistically representative
ssment of the nation's rivers and streams

ological and habitat condition

ajor stressors

y human health indicators

ange in stream condition

1,942 sites sampled – plus 234

and-selected sites and 200

e-sample visits – describe the condition

f perennial stream and river miles across the lower 48 states

NRSA 2008/09: Design of the Survey

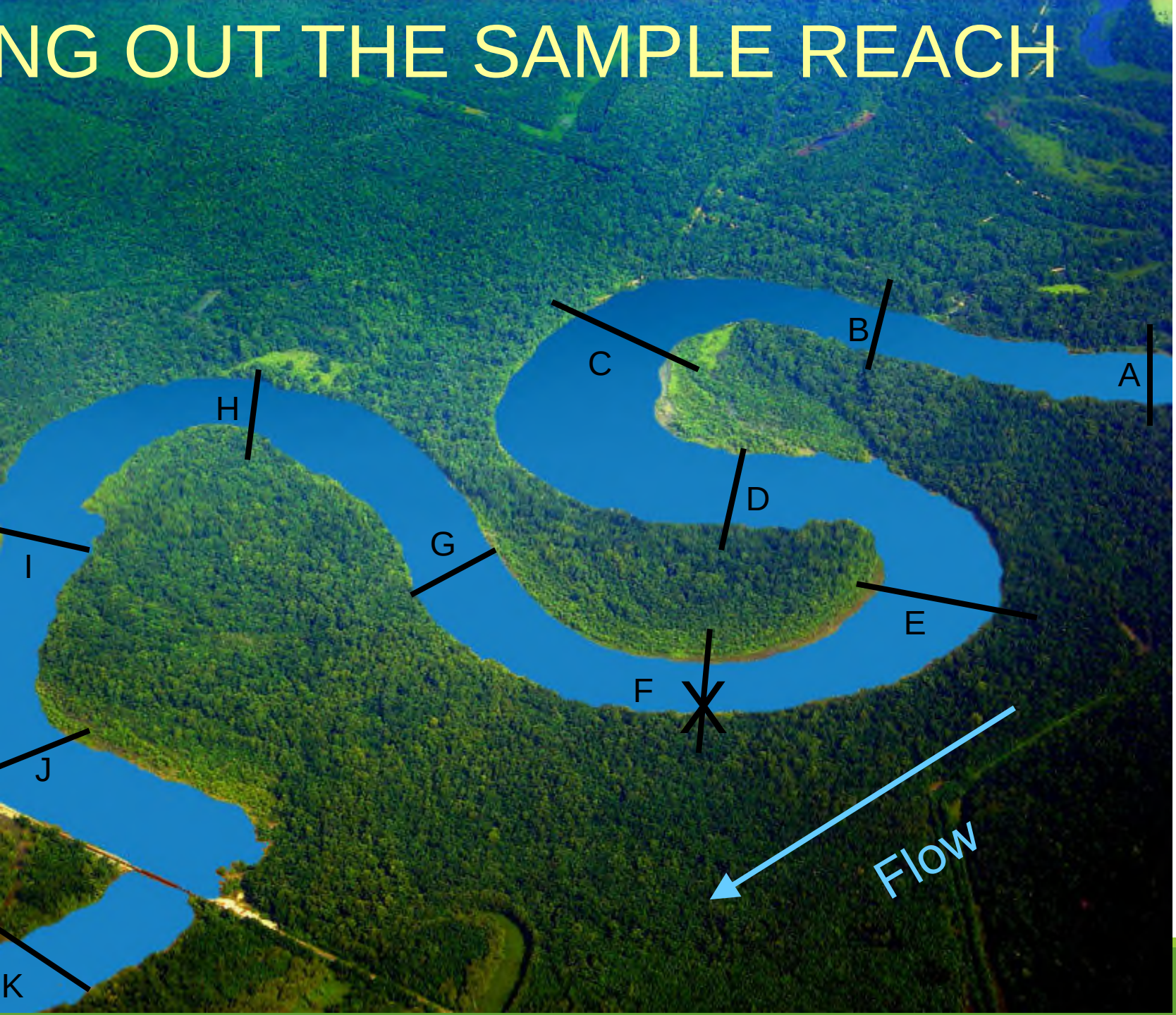
ll streams and rivers within the 48 contiguous states that have flowi ater during the study index period

- Includes major rivers (including Great Rivers) and small streams
- Includes run-of-the-river ponds and pools with less than 7 day residence time
- Must have > 50% of the reach length with standing water

he target population excludes:

- Tidal rivers and streams up to head of salt
- Slow moving reservoirs

NG OUT THE SAMPLE REACH



In-situ (pH, DO
Temperature,
Conductivity)
Water Chemis
Chlorophyll-*a*
Microcystin
Benthic-
Macroinvertel
Periphyton
Physical Habit
Assessment
Fish Assembla
Fish Tissue
Enterococci

A few differences between wadeable and nonwadeable methods

Nonwadeable

- Water sample collected at Transect A
- Fish: Electrofishing begins at upstream end of reach and proceeds downstream
  - Boat/Raft electrofishing is primary method
  - Barge/Backpack and seining are secondary for shallow habitats

Wadeable

- Water sample collected at X s
- Fish: Fishing will start at the downstream end of the reach and continue upstream
  - Barge/Backpack is primary
  - Seining is alternate (not to b combined with electrofishin

A few differences between wadeable and nonwadeable methods

Nonwadeable

Phab: Littoral plot 20 x 10: Collect sediment, fish cover, depth, large woody debris (LWD)

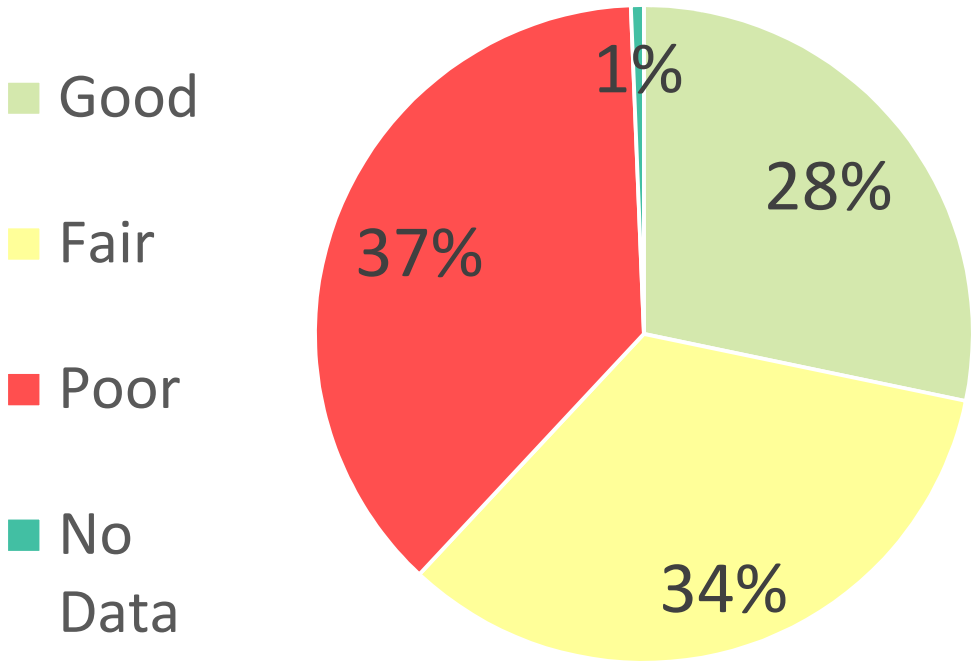
Benthic: Collect sample at each of the 10 m x 15 m transects; Take 1 sweep (1 linear meter) at the dominant habitat type

Wadeable

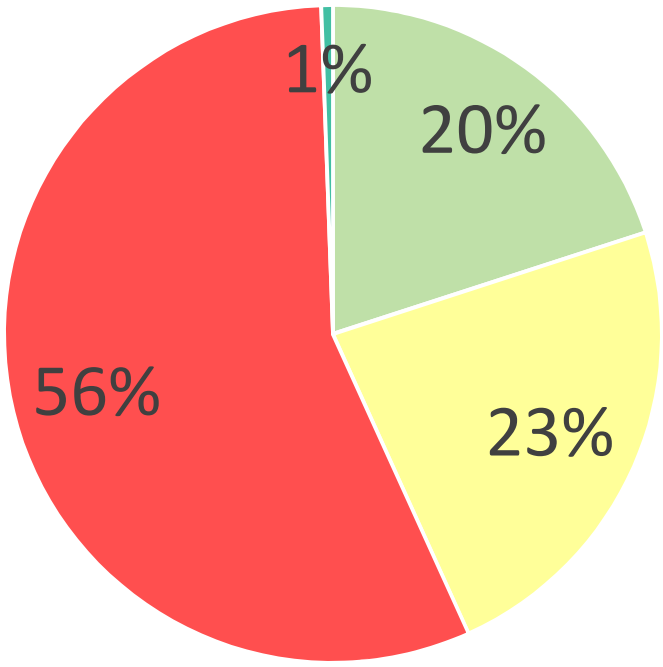
- Phab: Sediment and depth collected on transect; Fish Cover across entire stream; LWD entire reach
- Benthic: Collect sample at 1 ft^2 quadrat 1 m downstream from each of the transects (L, C, R); Vigorously disturb substrate within 1 ft^2 quadrat

NRSA 08/09 Draft Assessment for Benthic MMI*

5th order and larger

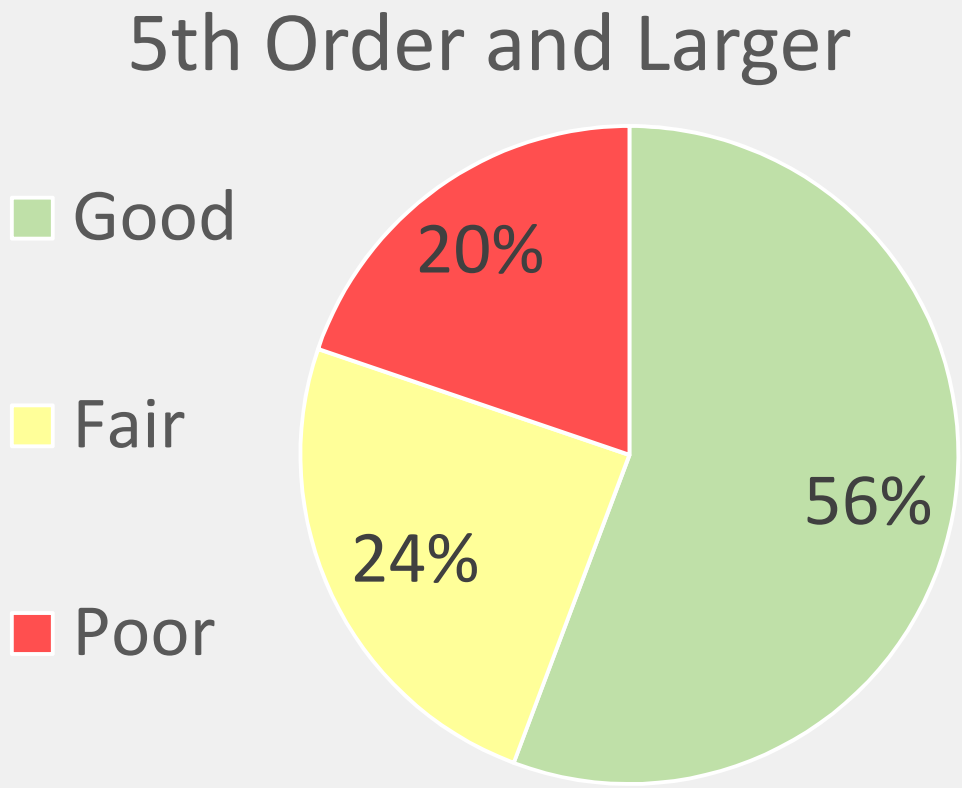


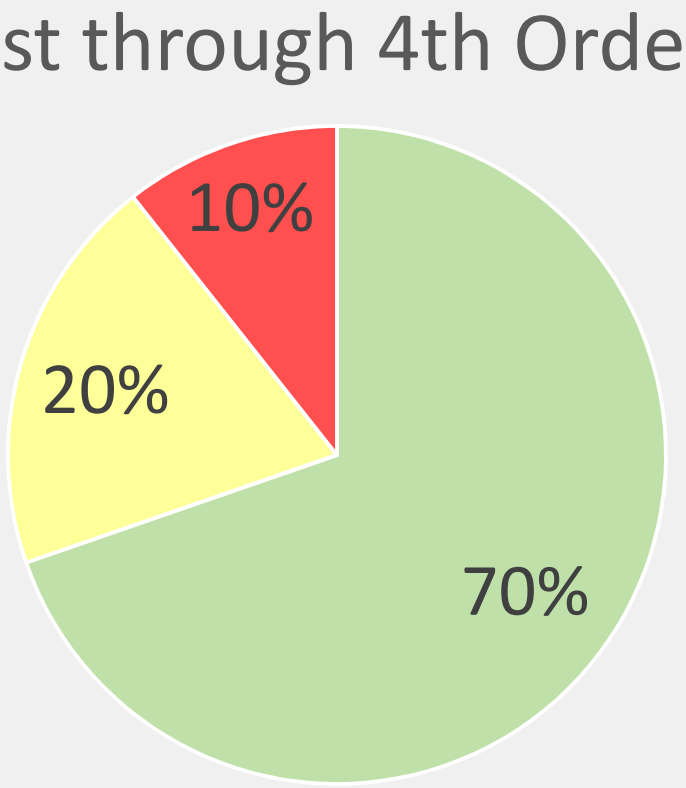
1st through 4th order



exactly the same as wadeable vs. nonwadeable

NRSA 08/09 Draft Assessment for Instream Habitat*





ctly the same as wadeable vs. nonwadeable


Benthic
macroinvertebrates


Water quality


Algal community


Physical habitat


Fish community and fish tissue

Recreational Indicators

A few extra slides

Fish Assemblage

3 Variations of Non-Wadeable Fish Sampling

Small Non-Wadeable (width < 12.5 meters)

Medium Non-Wadeable (width 12.5 to 25 meters)

Large Non-Wadeable (width ≥ 25 meters)

Width will determine:

Minimum fish sampling reach

- Number of subreaches to fish

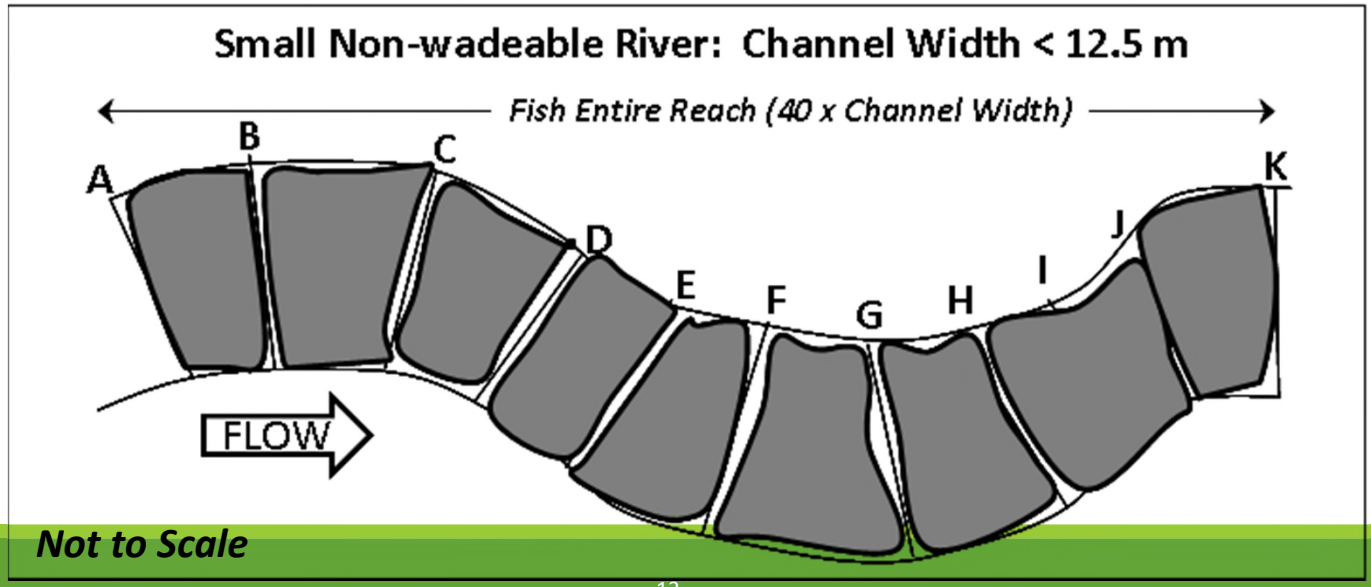
Edge only, or entire width

Small Non-Wadeable (< 12.5 m)

~~Sampling reach will be between 150 and 500 meters~~

Subreaches will be between 15 and 50 meters each

- Sample all 10 subreaches in their entirety from bank to bank starting at Transect A
- Total button time is roughly 500-700 seconds per subreach
- No minimum fish number



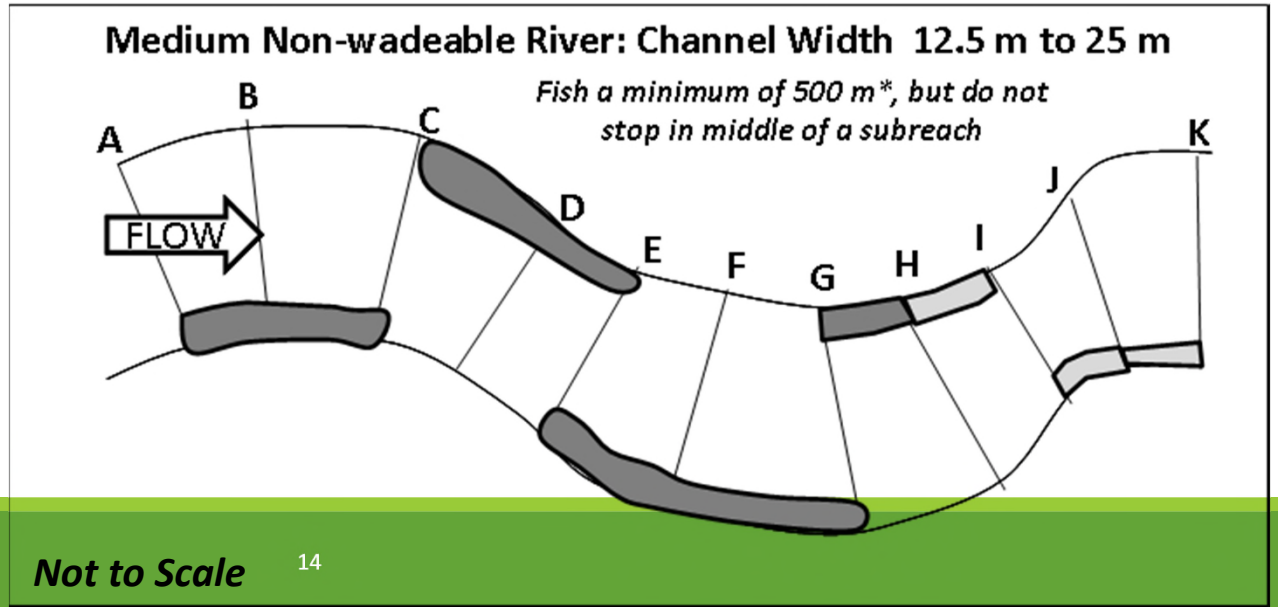
Medium Non-Wadeable (12.5 – 25 m)

~~Sampling reach will be between 500 and 1000 meters~~

Subreaches will be between 50 and 100 meters each

Minimum fishing length = 500 meters which will between 5 and 10 subreaches. *If needed, extend fishing length to end at a transect*

- Fish each subreach along bank in pairs of subreaches starting at a random bank at Transect A
- Button time is roughly 700 seconds per subreach
- Minimum fish number is 500 unless all 10 subreaches have been fished.



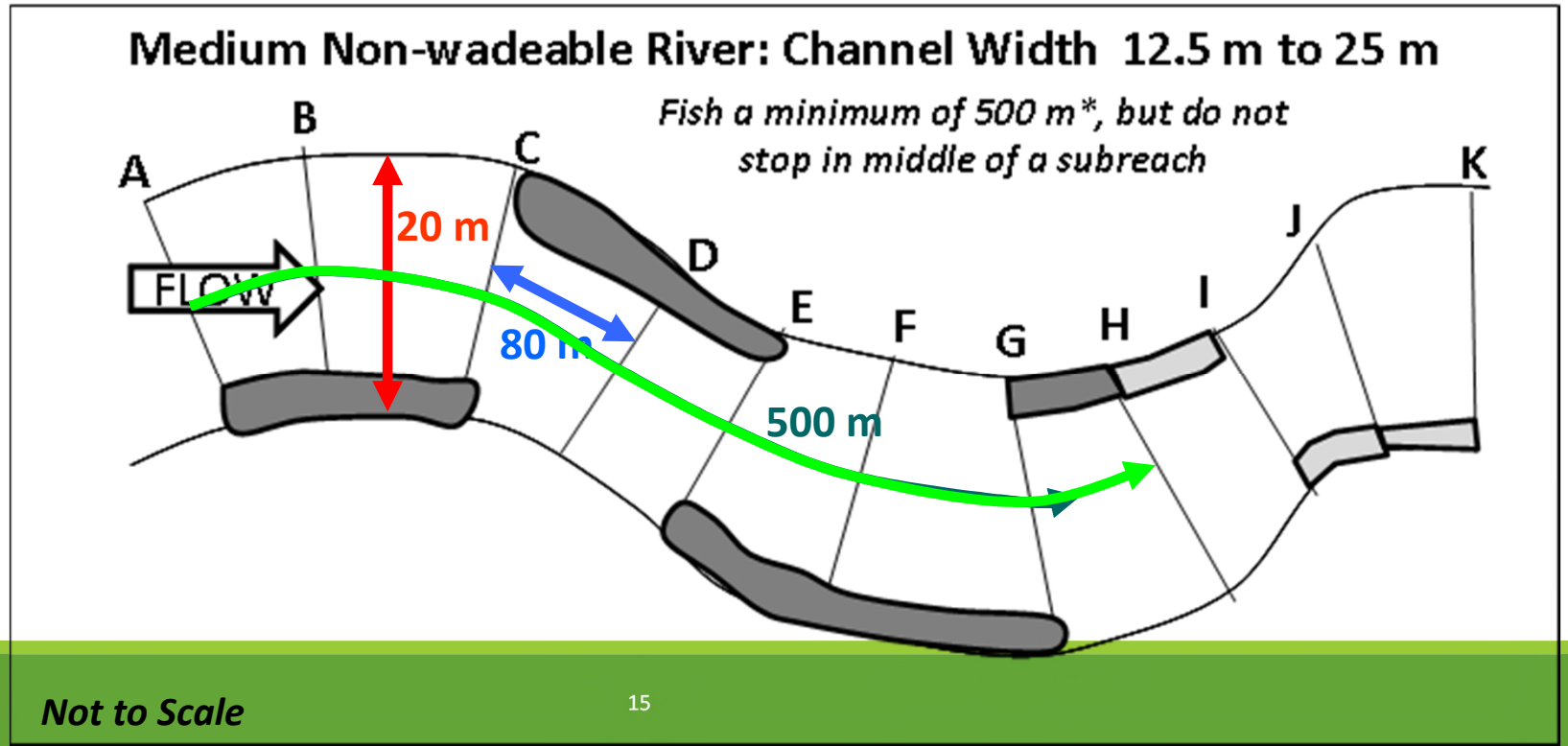
Medium Non-Wadeable (12.5 – 25 m)

EXAMPLE: *Mean CW = 20 meters*

Each subreach = 80 meters

500 meters would fall between transects G and H

- Extend reach to encompass entire subreach and at least 500 m



Large Non-Wadeable (≥ 25 m)

~~Sampling reach will be between 1000 and 4000 meters~~

Subreaches will be between 100 and 400 meters each

Minimum fishing length = 5 subreaches (which will equal between 500 and 2000 meters)

- Fish each subreach along bank in pairs of subreaches starting at chosen PHab bank at Transect A
- Button time is roughly 700 seconds per subreach
- Minimum fish number is 500 unless all 10 subreaches have been fished.