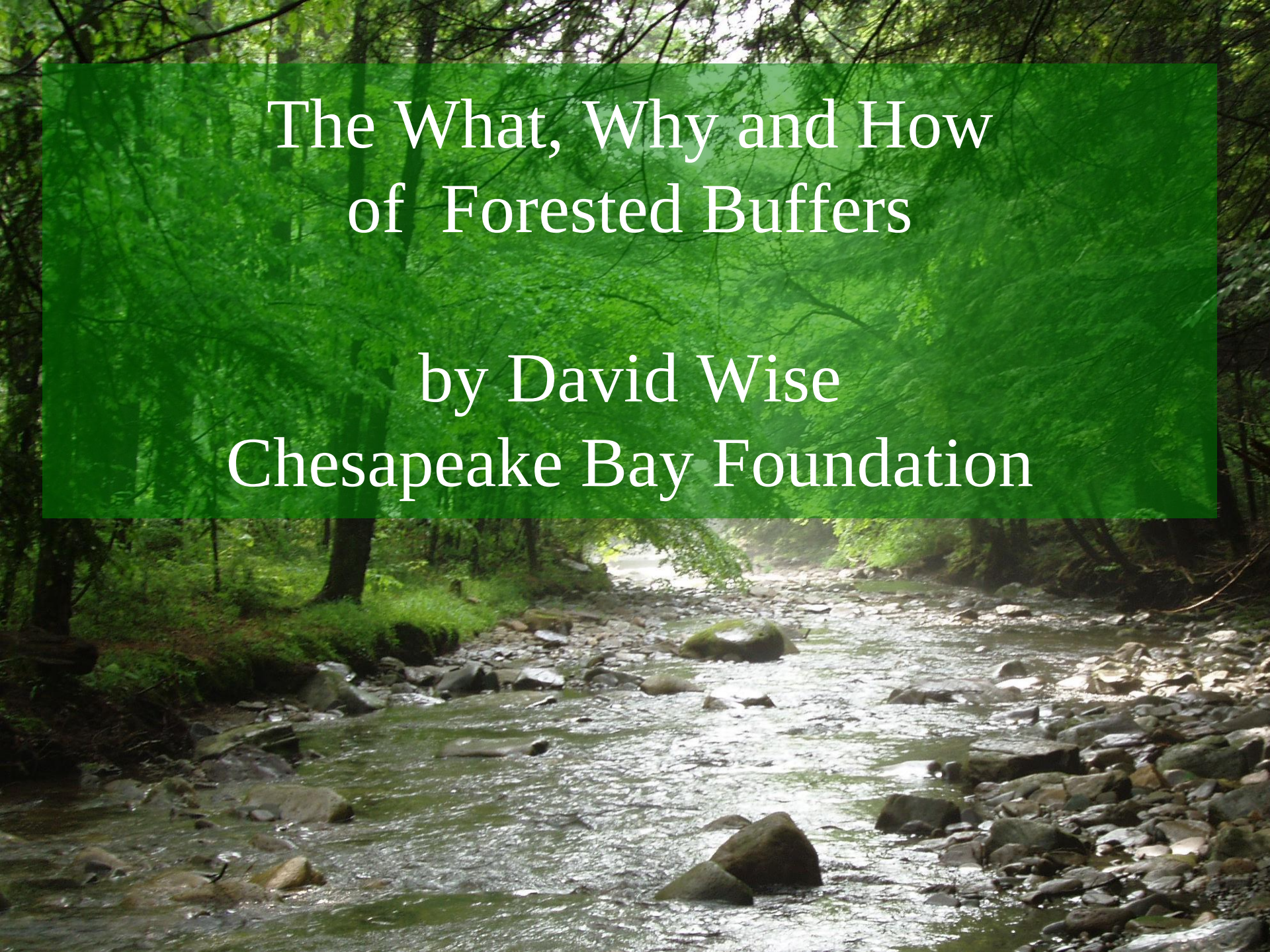


The What, Why and How of Forested Buffers

by David Wise
Chesapeake Bay Foundation

WHAT are buffers

clean water factories

It’s about the microbes!

Dairy rumen

Soil health

Stream health

Goal of buffers:

Enable landowners to do voluntary, profitable buffers

which can include…

fences to exclude livestock,

alternative water sources


…including lines and wells,

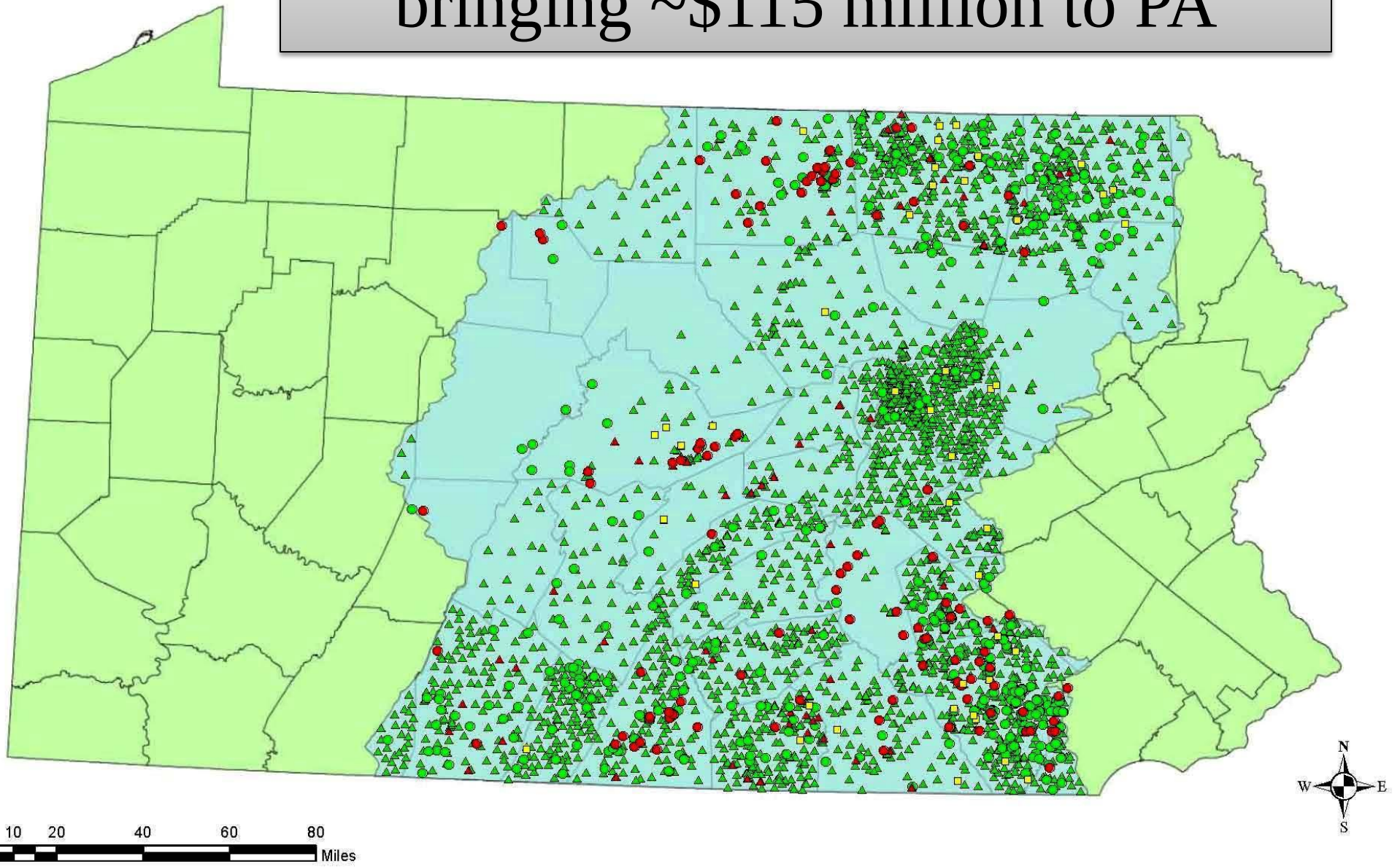

stabilized stream crossings,

and tree plantings with
proper post-planting care.

work to date

- over 4600 landowners
- over 2175 miles of buffers
- roughly $115 million in costs (most via CREP)

CREP buffers: 23,000 acres to date bringing ~$115 million to PA



Buffers work…

1. Buffers work for clean water
2. Buffers work for landowners

old news: forested buffers…

- Keep pollutants out of creeks
- Convert runoff into groundwater
- Capture sediment on floodplains
- Moderate flood peaks & drought lows
- Reduce bank erosion

big news: trees boost in-stream water purification

forested streams…

- remove 2 to 8x more nitrogen pollution
- have 2 to 5x more stream life

(Stroud Water Research Center in ***Proceedings of the National Academy of Sciences***)

How forests multiply pollution removal

- increase the stream's bottom area 2-3x
- create preferred conditions for stream life
- produce lots of preferred foods

Analogy: bigger cow herd on larger pasture with better feed

#2. Buffers work for farmers

buffers work financially:

CREP forested buffer contracts to date:

- provide $60 million in project costs
- will pay about $55 million in rent

buffers work for herd health

- cleaner, drier animals
- stabilized crossings
- safer drinking water

buffers work for rotational grazing

- builds good stream bank fences
- provides alternative water & crossings
- further subdivision fencing is cheap

HOW we do buffers

- Main partners: USDA, PA DEP, CBF, PGC
- PA's CREP is nation's largest: 265,000 acres
- Fully used, will be worth ~$500 million
- A voluntary, profitable conservation option

What is PA CREP?

- Conservation Reserve Enhancement Program
- Partnership of private, state and federal conservation groups
- Focus: water quality, fish and wildlife
- CREP forested buffers are popular

CREP forested buffers

- 35’ minimum width
- 100 trees, 25 shrubs per acre
- annual rent from USDA ($170-350/acre)
- Post-planting care (big change in 2006)
  - contractually required
  - key parts are fully paid

CREP Buffers Work for Landowners

- Pays for installation (typically 100%)
  - Including fences, crossings, alternative water
- Pays for key parts of post-planting care
- Pays yearly rent:
  - Lanc. Co.: $240-$350/acre/year
- Option to re-enroll for second contract
- Potential income from tradable credits

Who is eligible?

- Private, rural landowners
  - No requirement to be a farmer
  - 2/3 of buffer owners aren't farmers

Land Eligible for Forested Buffers

- Within 180’ of streams, ponds, etc.
- Less than 30% existing woody canopy
- No need for cropping history

CREP averages $1700/ac to plant


A four year old buffer
with good maintenance


An early CREP planting with no herbicide use; the “green death”

Vole damage to roots: the “brown death”

Since 2006: funding for post-planting care

Post-planting care is key

2x/yr herbicide for 4 years:

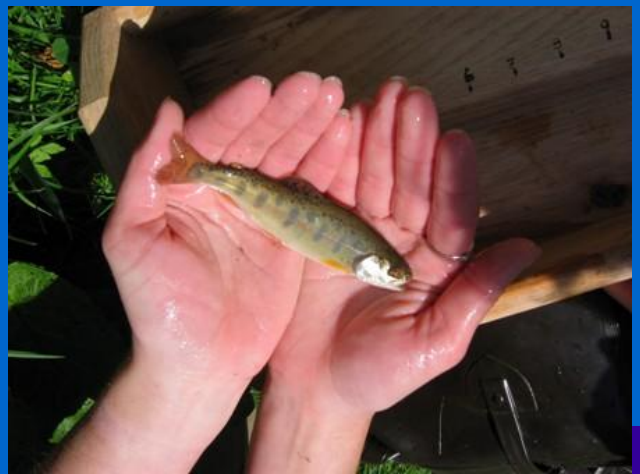
- 6x better tree survival
- 2x better growth

Sweeney et al 2002 in Restor. Ecol.

CREP pays 100% for key parts of care after planting

Success Stories

Millport Conservancy progress in 12 years



CBF/Stroud monitoring

Valley Creek:

- 4/5 of farms buffered
- 3x increase in pollution sensitive bugs
- may come off "impaired waters" list

Over 7,000 acres of wetlands aided


Don’t underestimate forested buffers –
remember the in-stream services
remove 2-8x more N than healthy grass


Don’t overestimate forested buffers

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