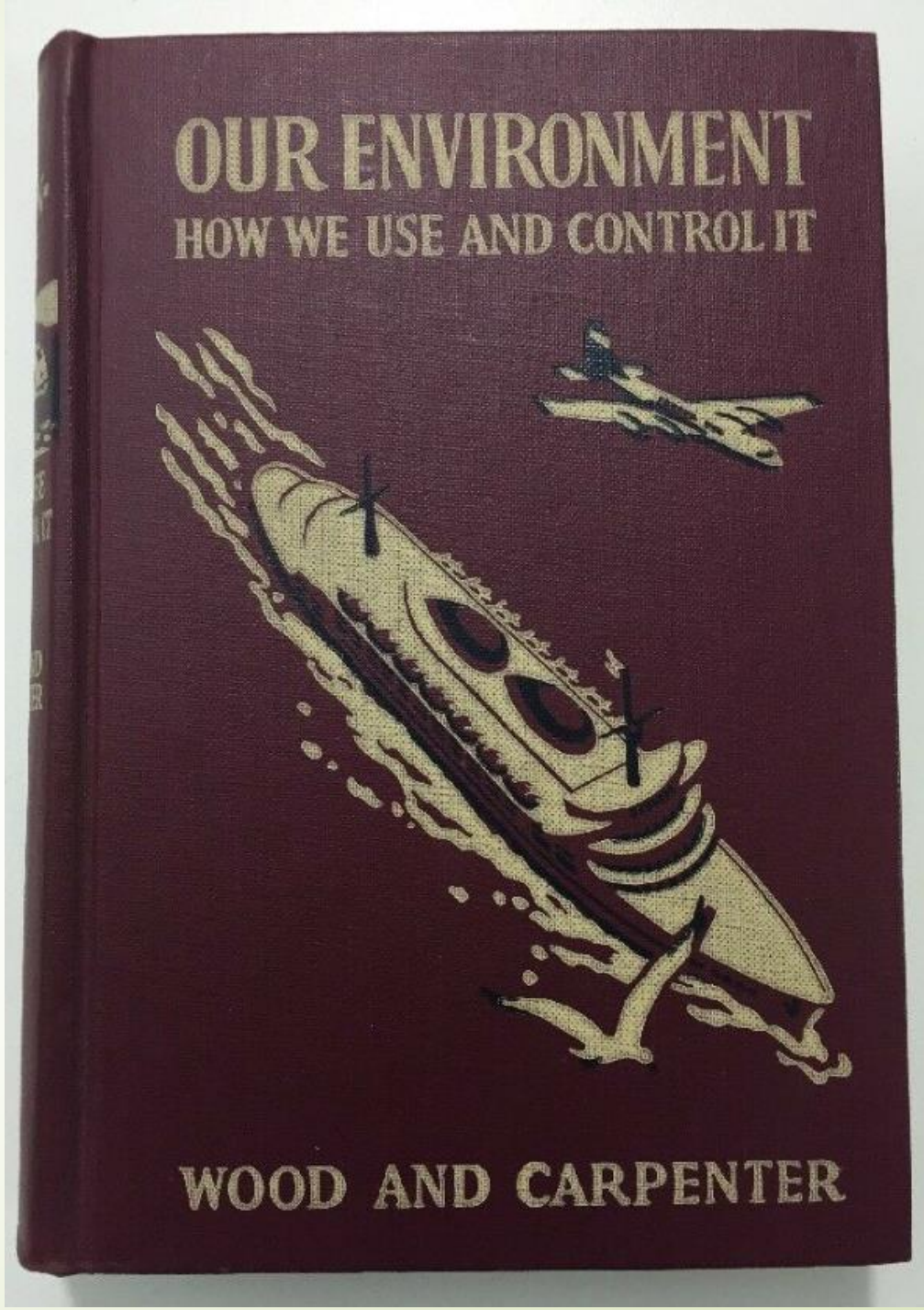
Stop the Segregation!

Viewing Headwater Streams as Integrated Aquatic Systems

Our Environment:
How We Use and Control It



Thesis Statements

- Lotic waterways ("streams") and associated wetlands comprise single, integrated aquatic systems, yet they are commonly treated as if they were not

- Such practices are largely detrimental to aquatic habitats and society at large.

Scope of statement

- Alluvial to semi-confined systems
- Headwaters regions or “free” streams

Scope of statement

- Alluvial to semi-confined
- Headwaters regions or “free” streams
- Not streams that have been perpetually isolated from their floodplains

Divide & conquer - for awhile…

What are the roots of riverine segregation?

- Survival

Divide and conquer (for awhile)

- Science and Engineering

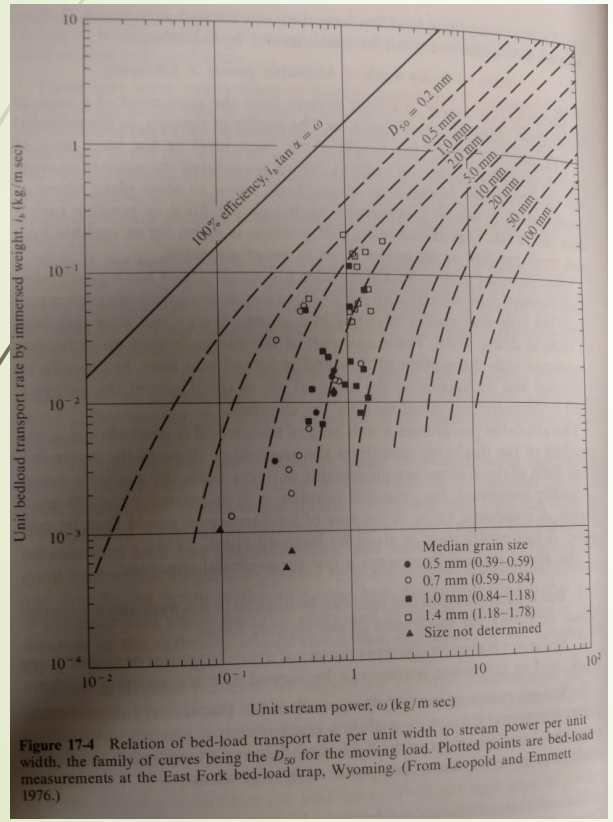
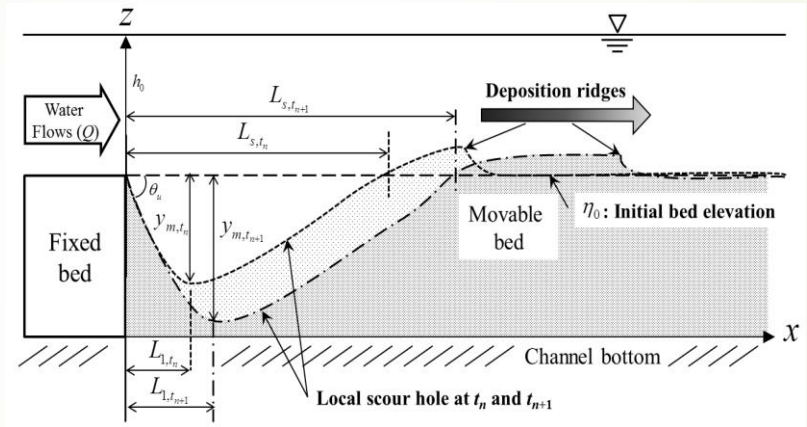
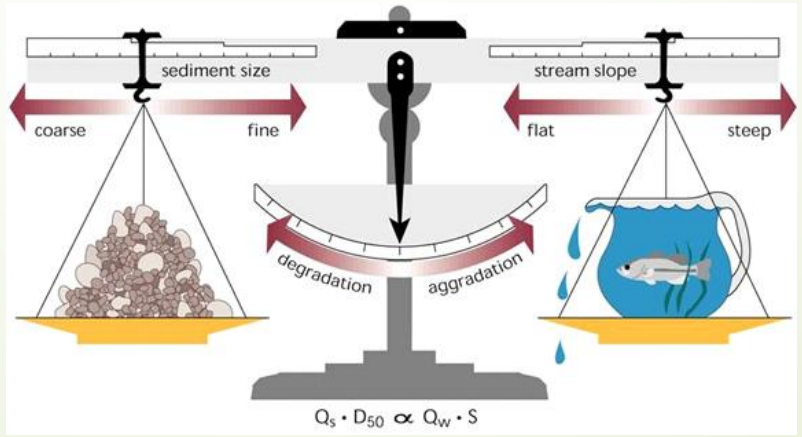


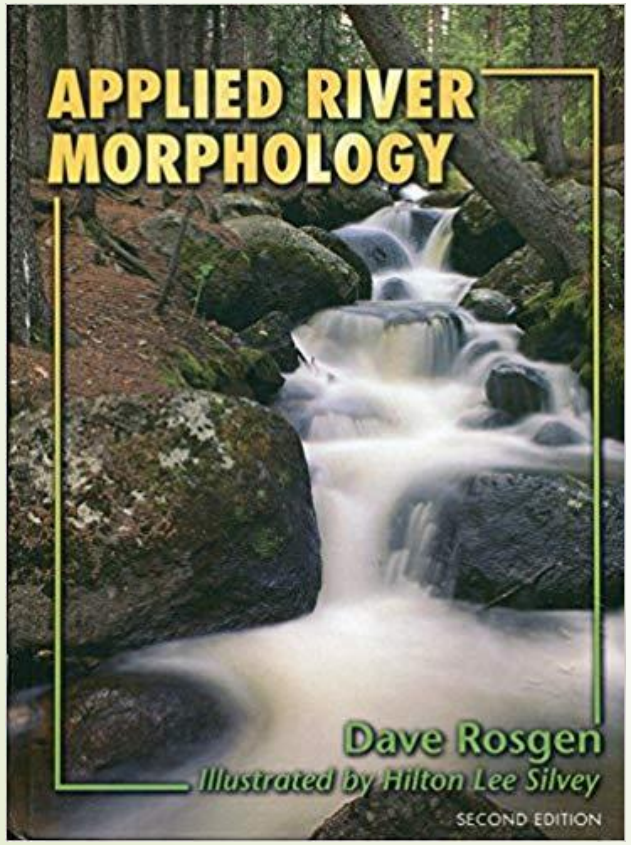
Figure 17-4 Relation of bed-load transport rate per unit width to stream power per unit width, the family of curves being the D_{50} for the moving load. Plotted points are bed-load measurements at the East Fork bed-load trap, Wyoming. (From Leopold and Emmett 1976.)

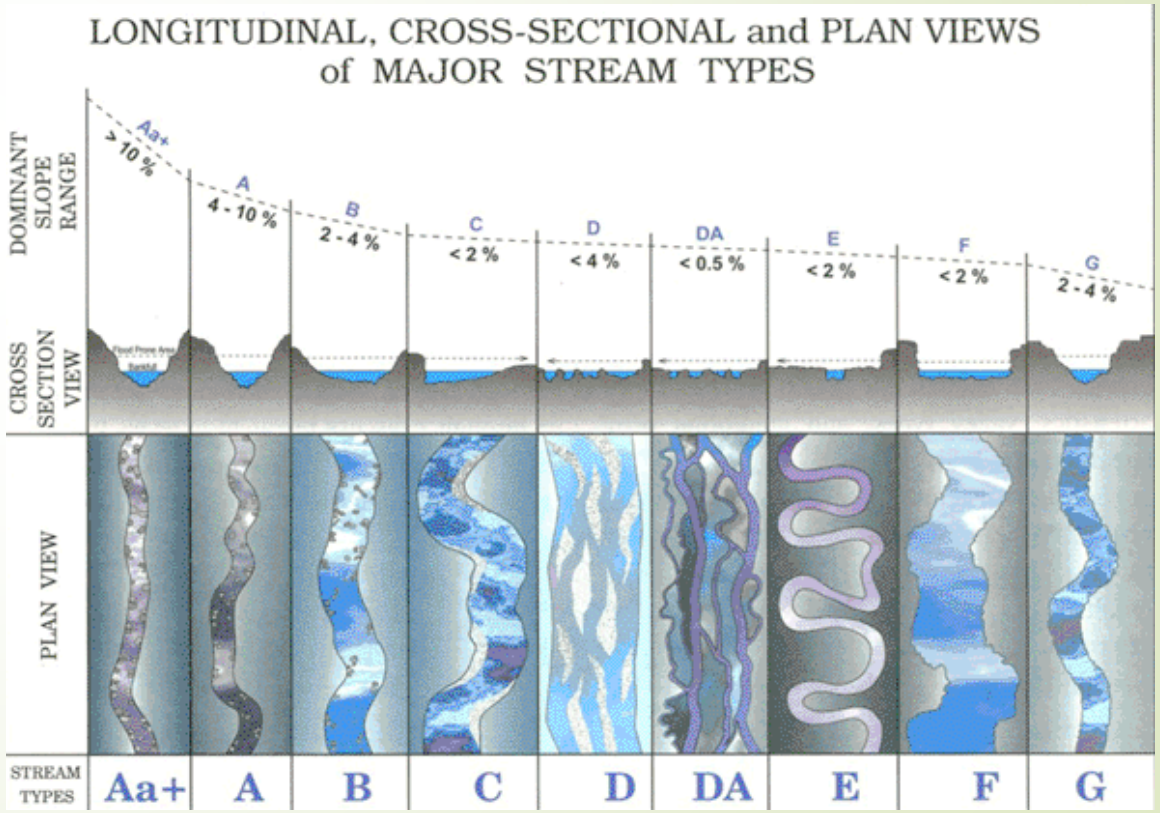




Divide and conquer (for awhile)

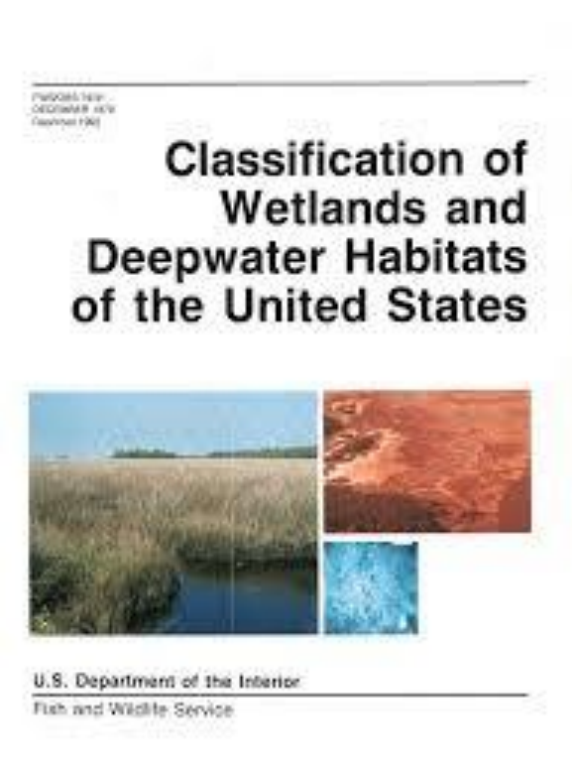
- Classification





Divide and conquer (for awhile)

- Classification



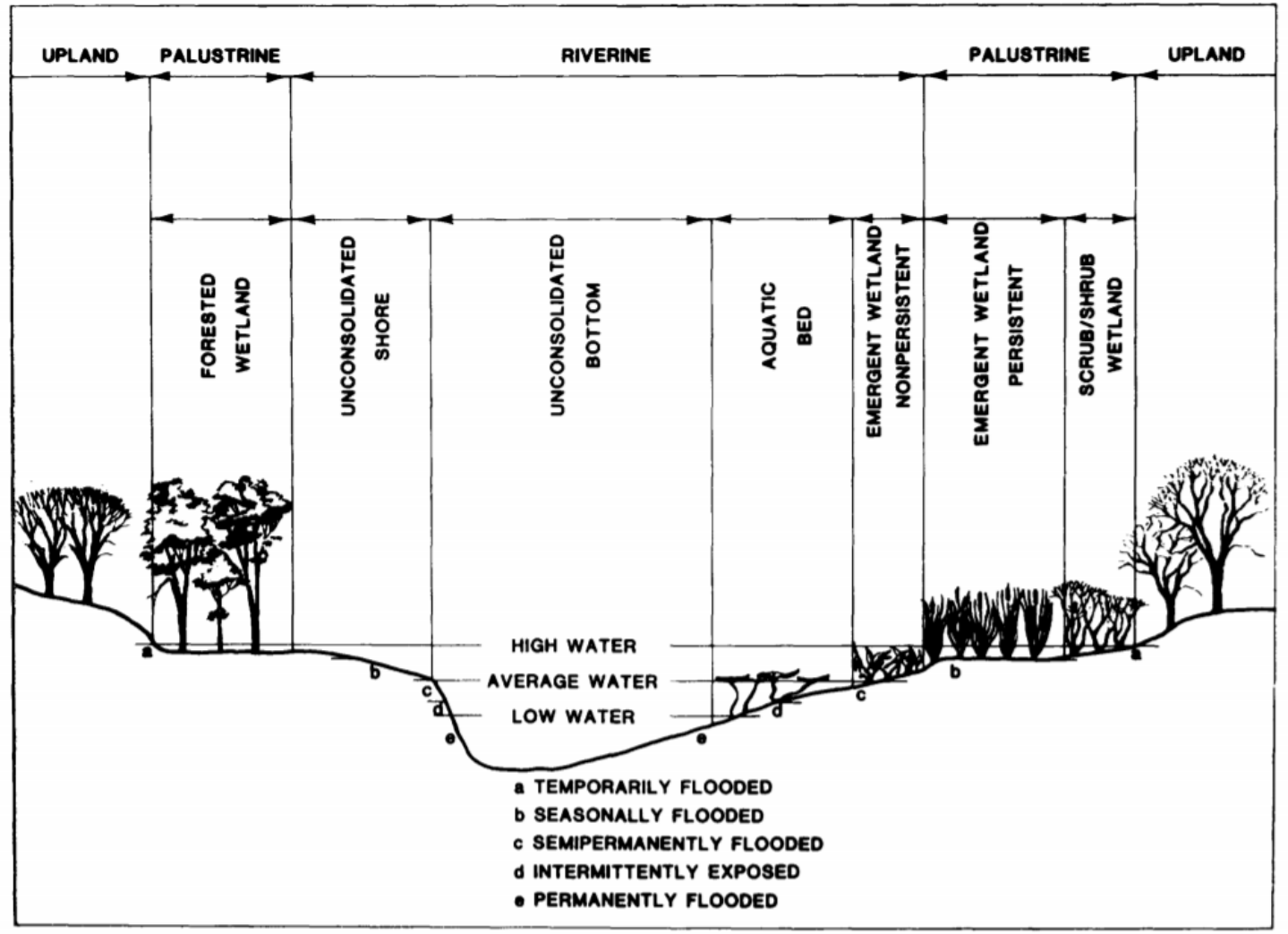
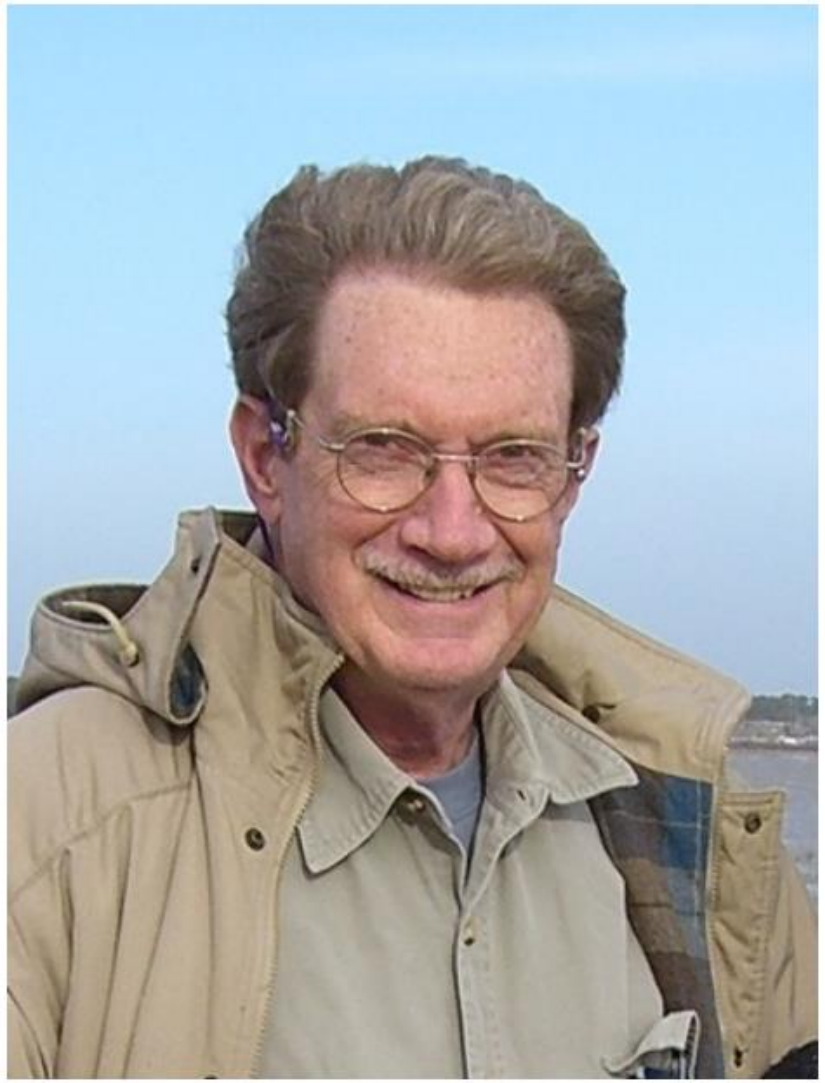
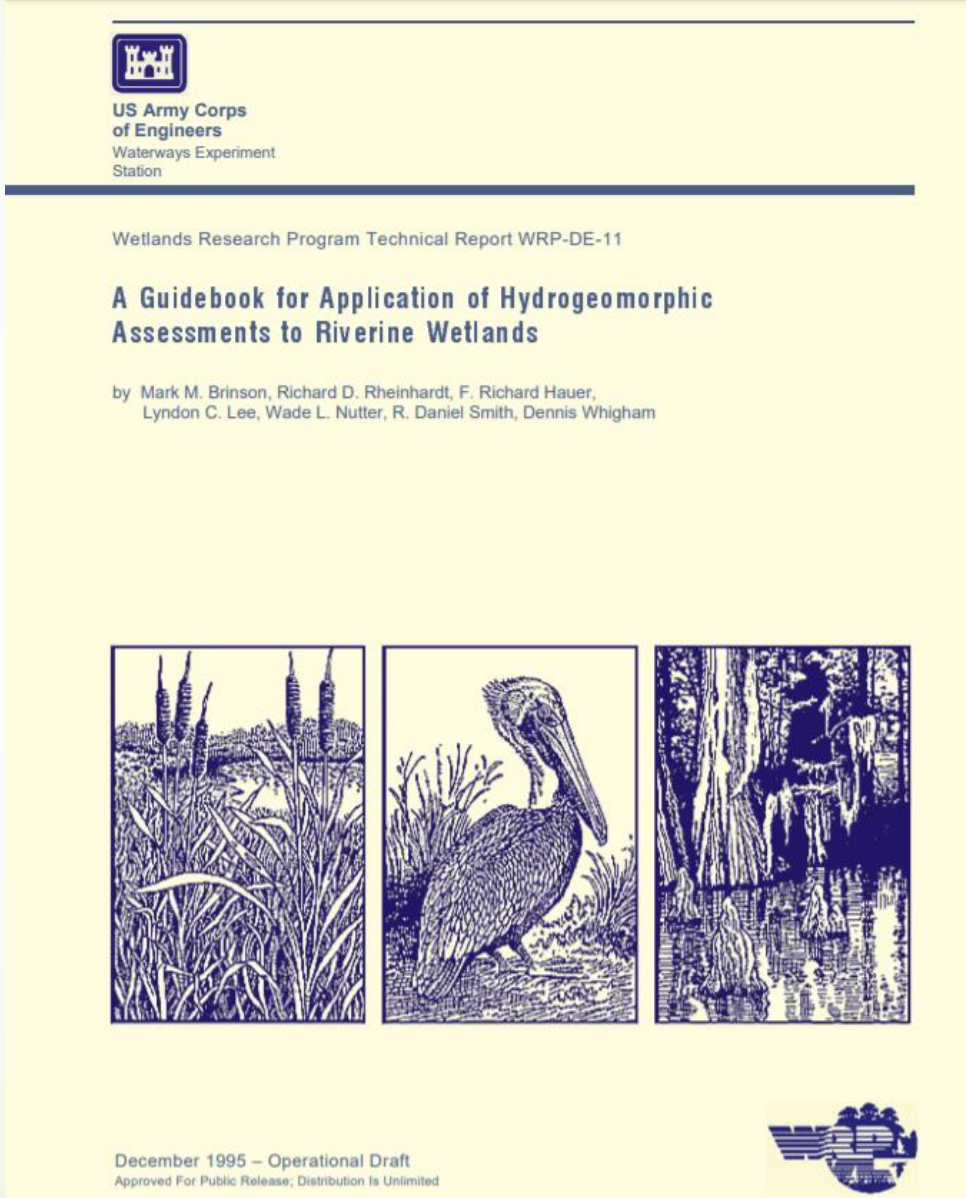


Fig. 4. Distinguishing features and examples of habitats in the Riverine System.

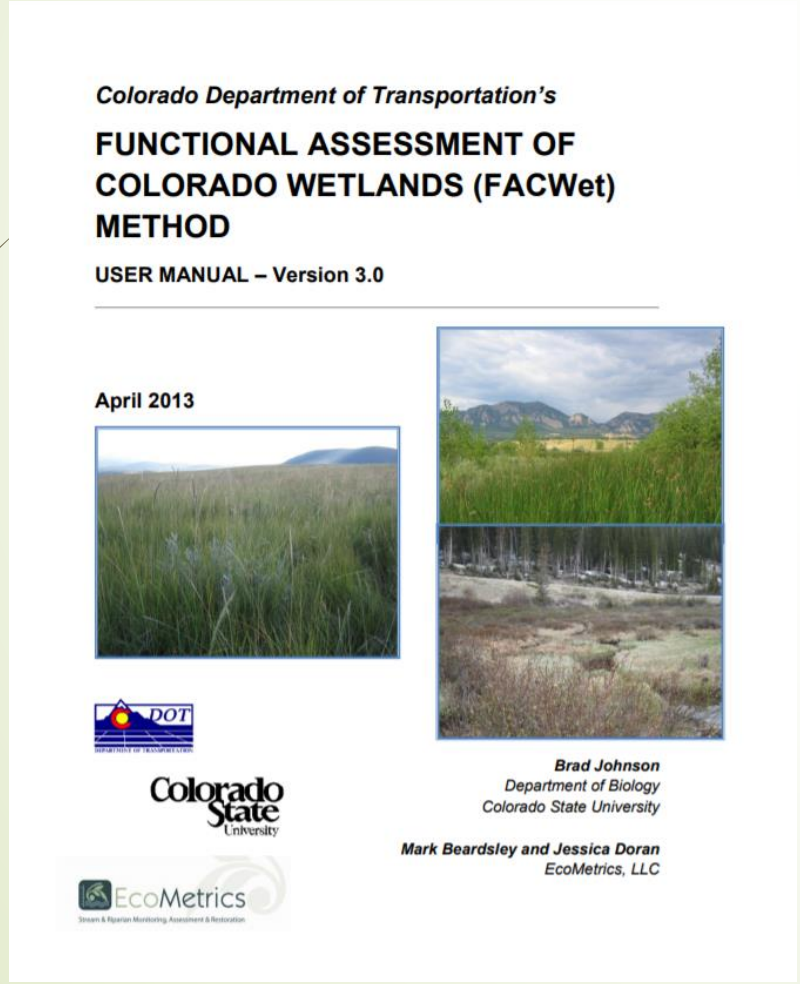
Reunite (for awhile)

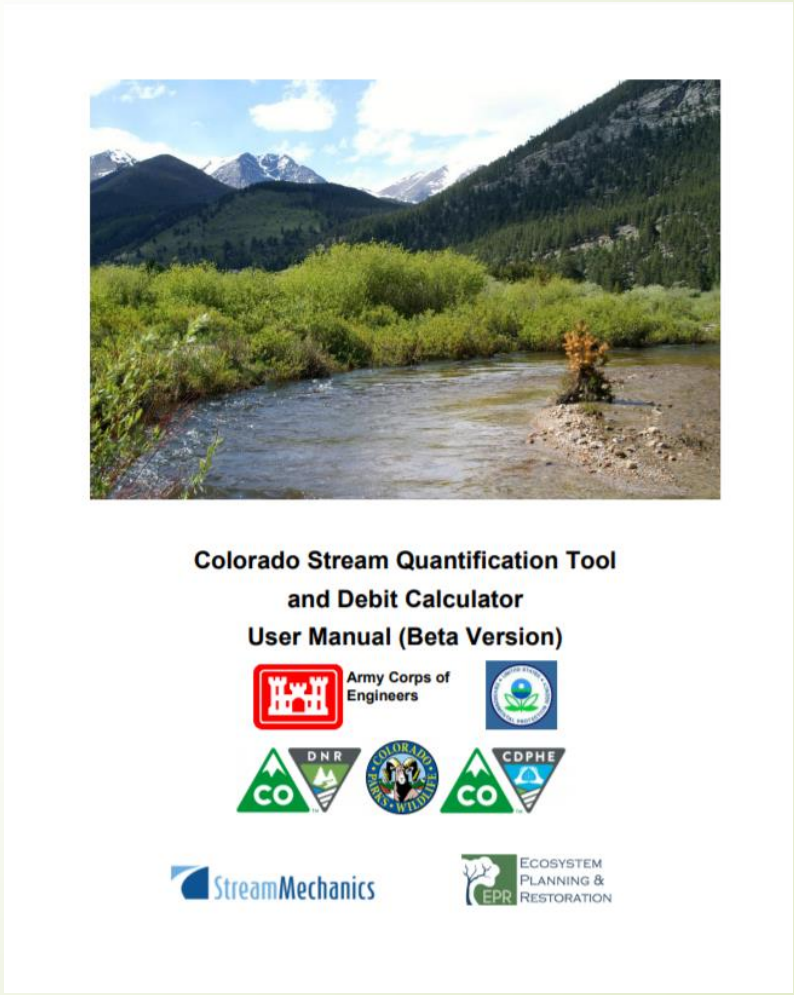




Divide and conquer (for awhile)

- Regulatory





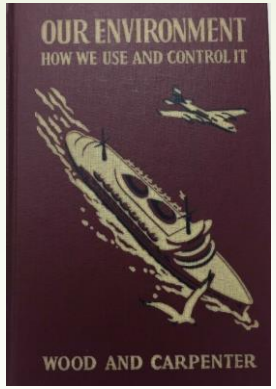
It's back to survival…

- Climate Change
- Wildfire
- Water insufficiencies

Headwaters

- ~80% of total stream length
- Large % retain natural or semi-natural function
- Or they have the capacity to regain it

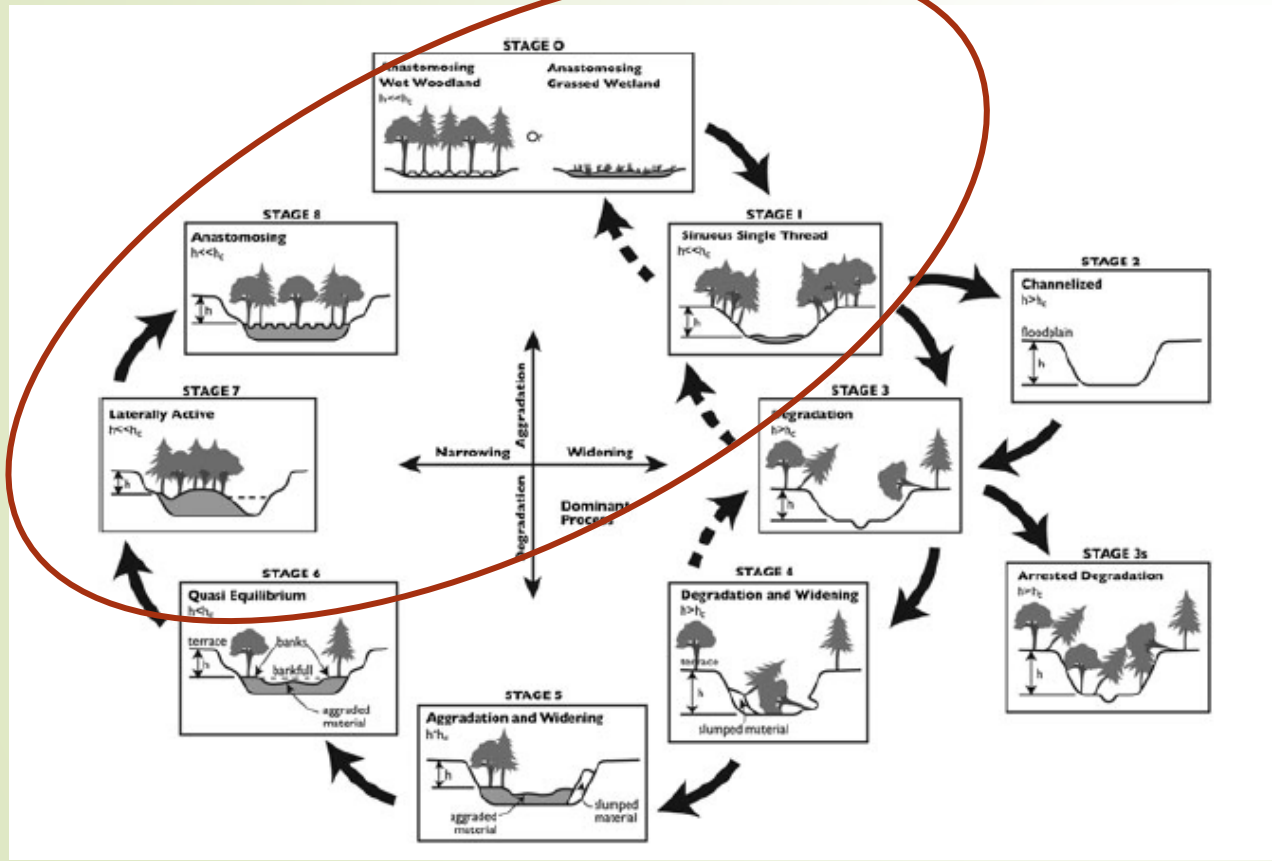
It's back to survival…

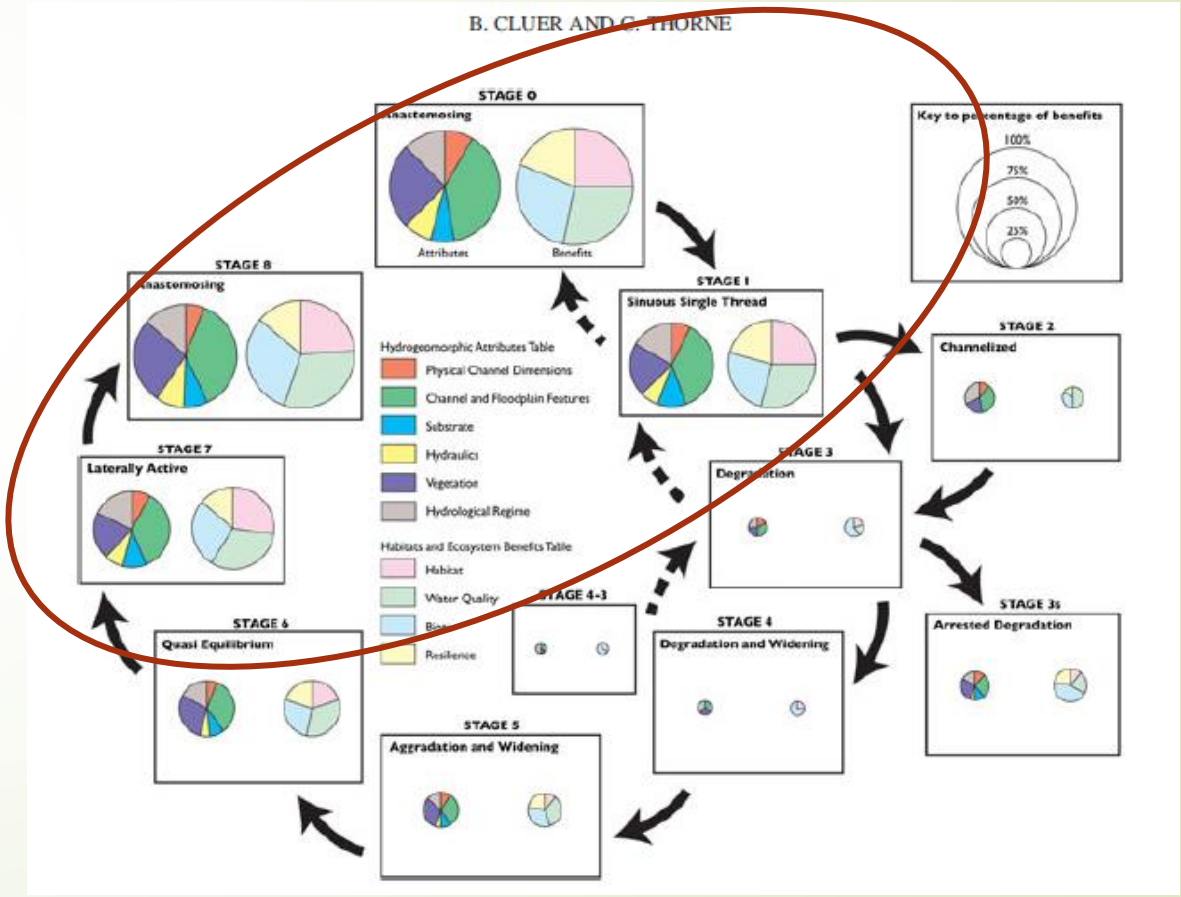


- Need to Use and Control these systems differently

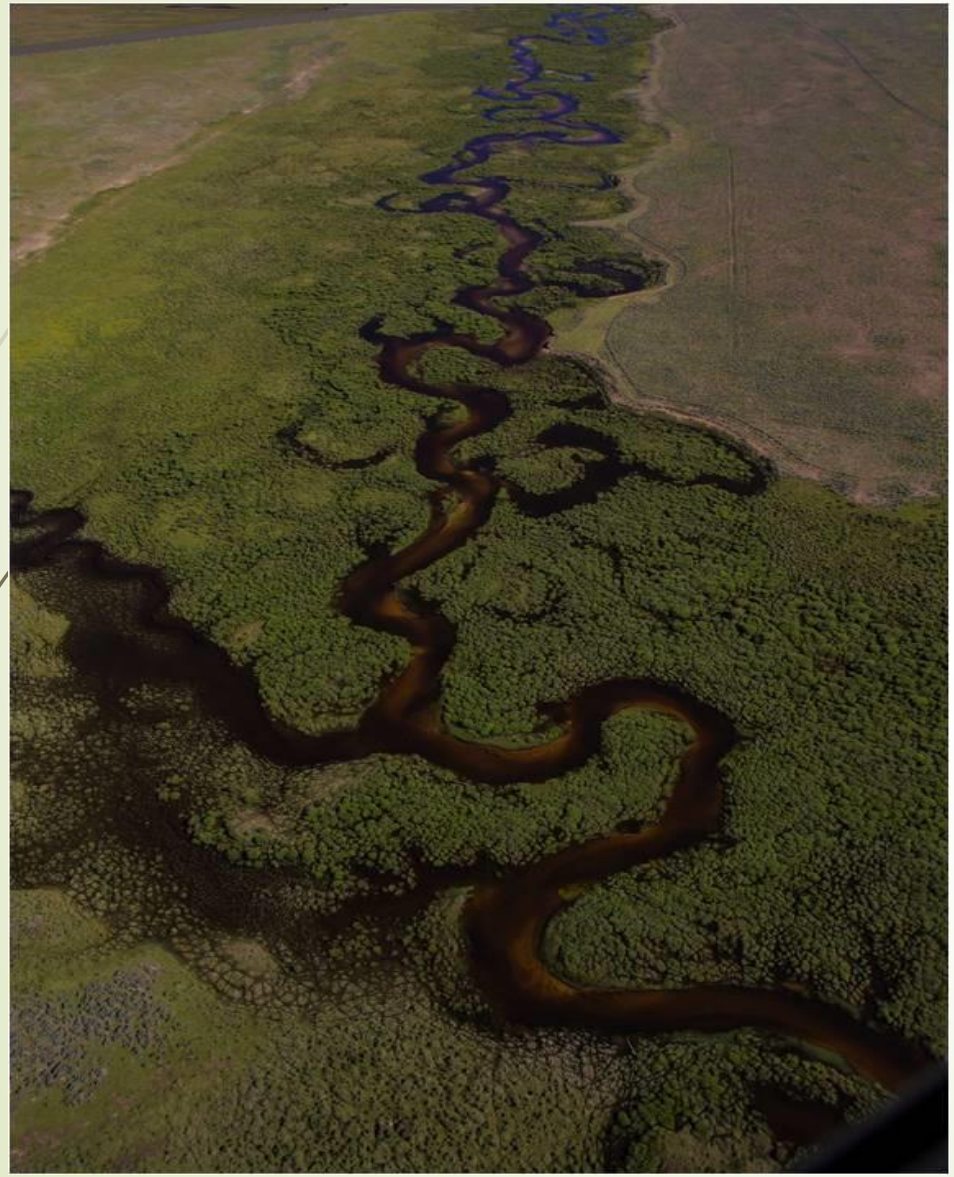
Reunited and it feels so good…

- Maximize watershed health, ecosystem services and resiliency





Might as fell fix what is broken…

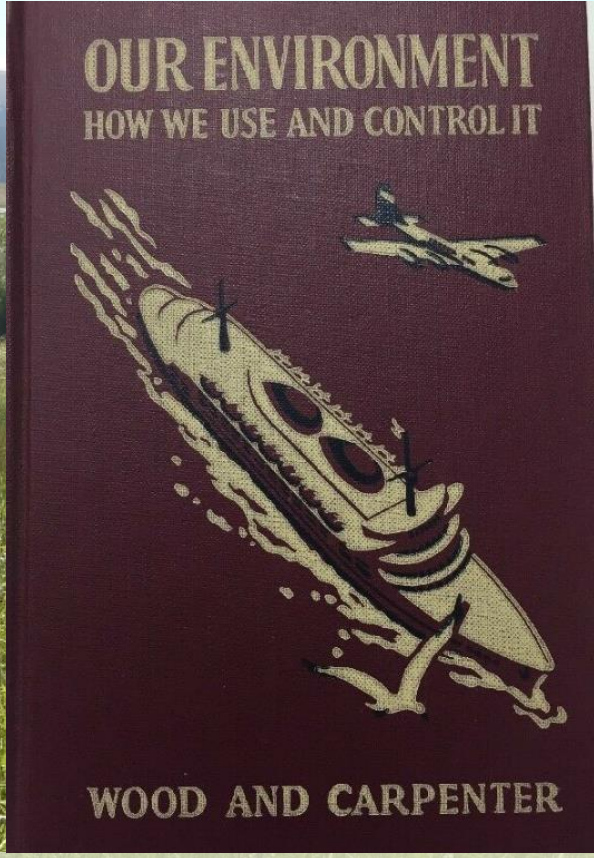


Might as fell fix what is broken…

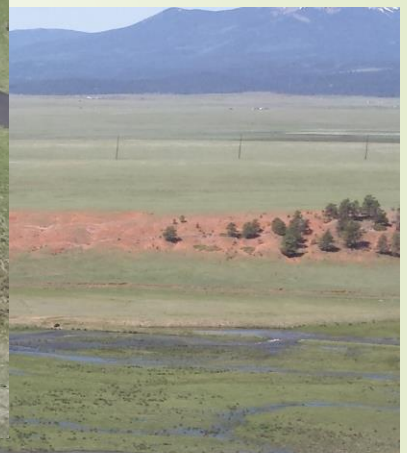
Re-engendering Resilience

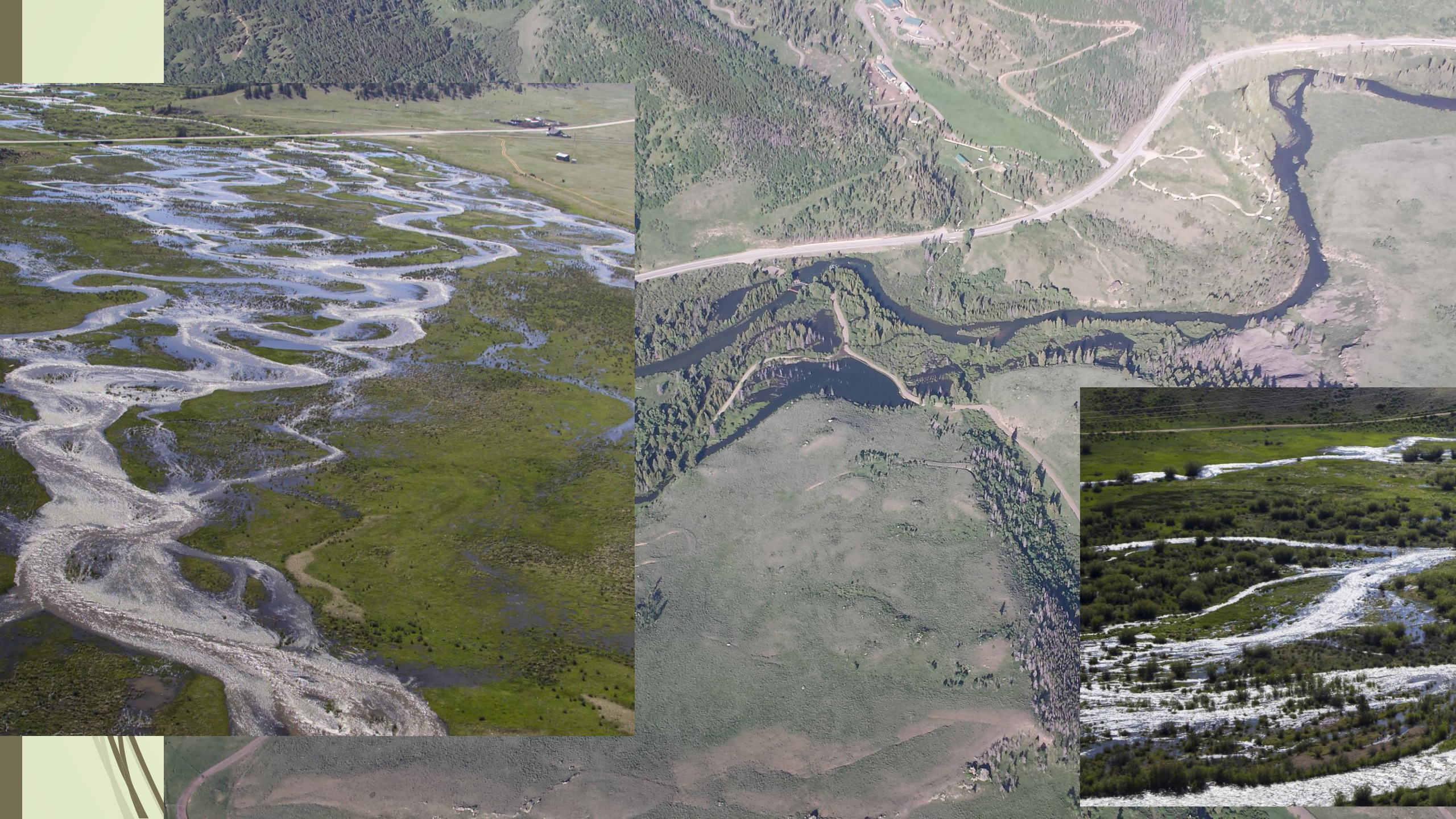
You only see what you look at

- Defining restoration goals, success or performance standards and assessments



- We need the ecosystem services provided by headwater streams for our continued health and survival
- Subtle, insidious, commonplace segregation of channel and riparian in headwaters systems leads to misconception and poorly functioning streams
- Work in channels can be valuable but it should generally be aimed at better connecting the grooves with the land around them. Everybody benefits





But these guys did