


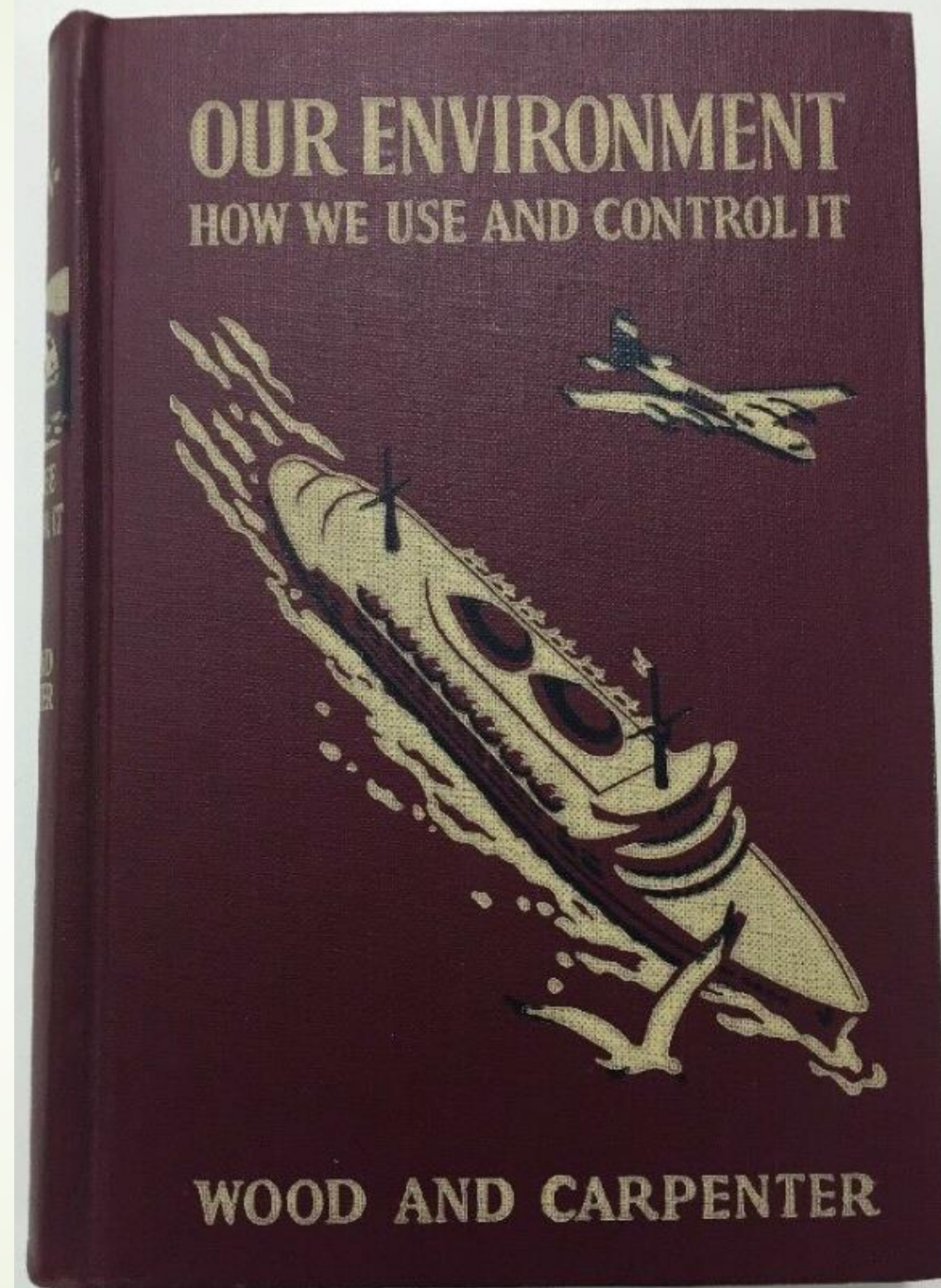

Stop the Segregation!

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

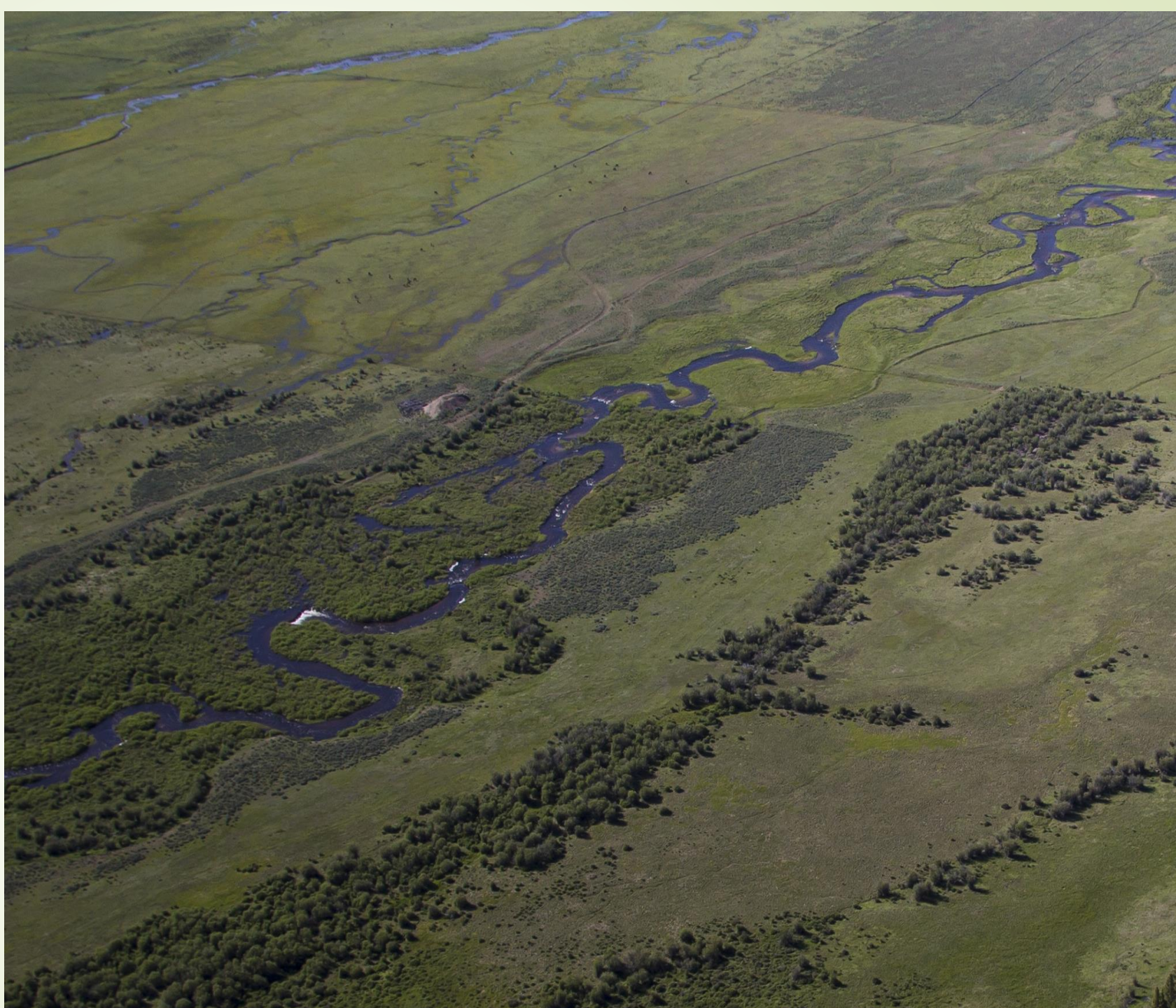
- ▶ Alluvial to semi-confined
- ▶ Headwaters regions or “free” streams
- ▶ Not streams that have been perpetually isolated from their floodplains



Divide & conquer - for awhile...

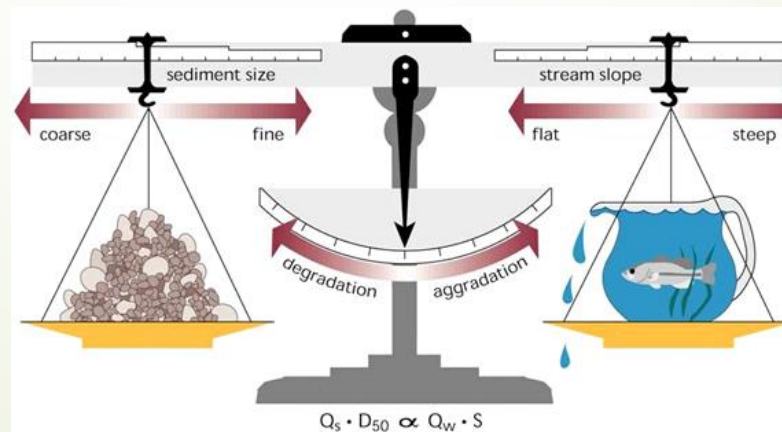
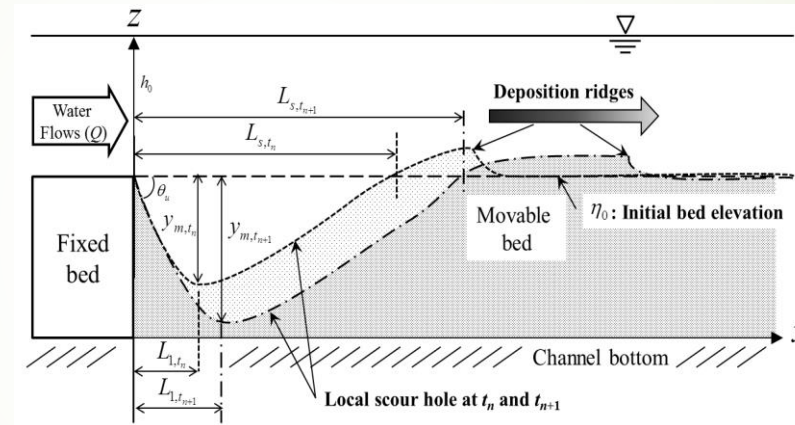
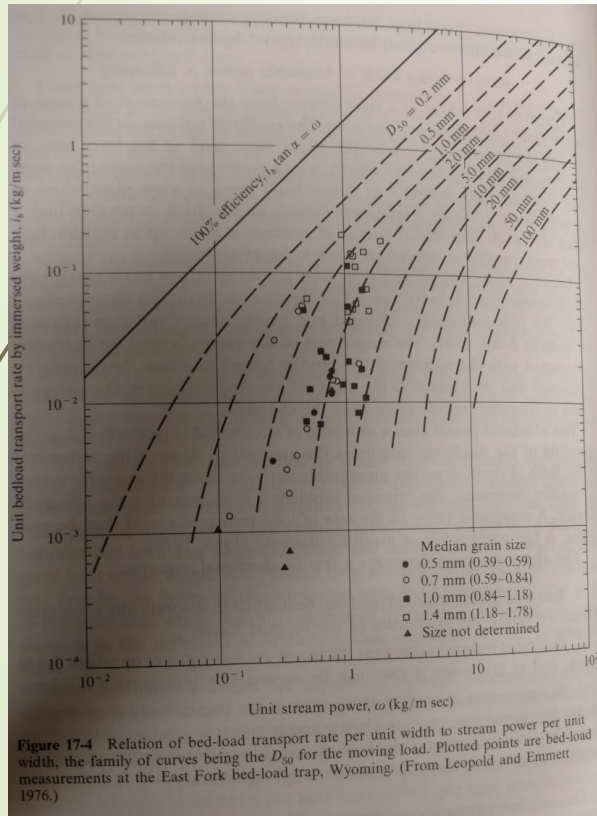
What are the roots of
riverine segregation?

➤ Survival



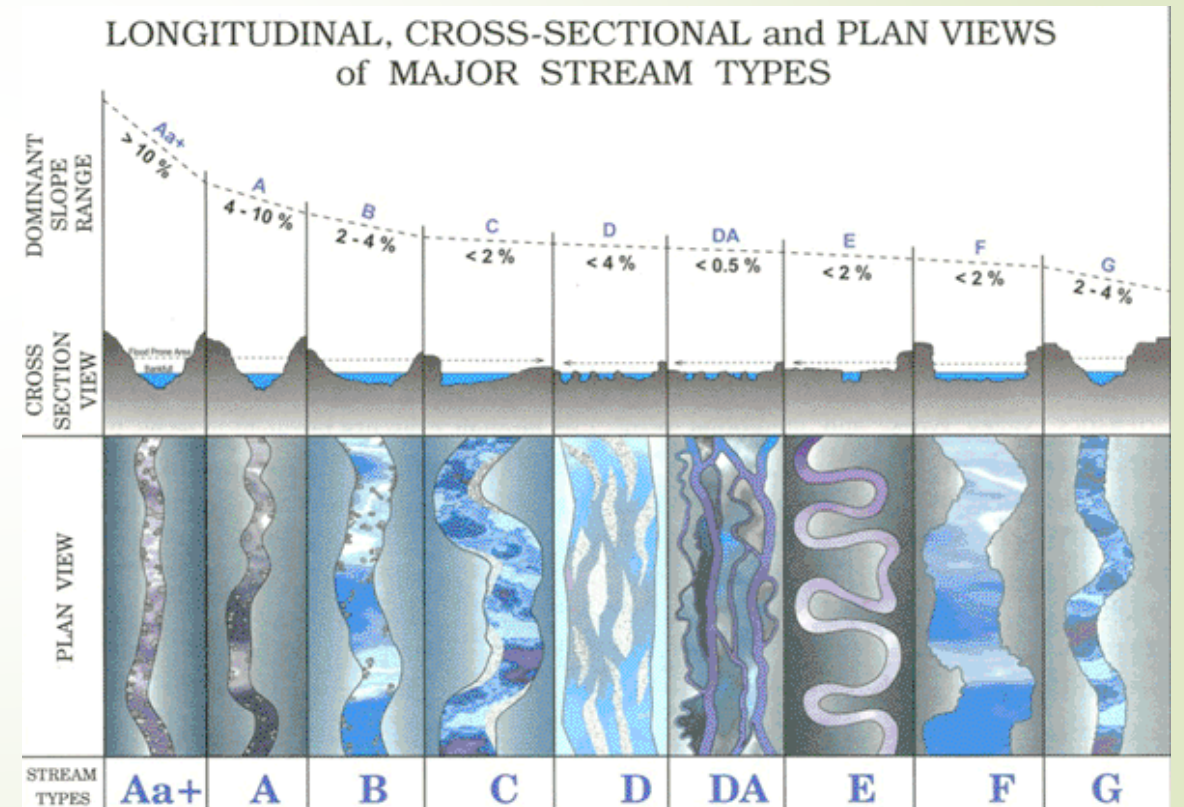
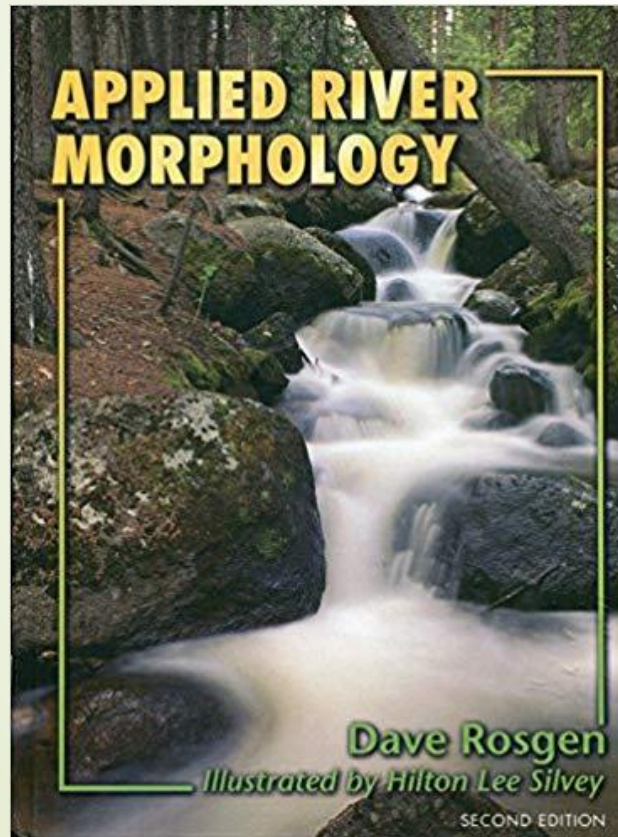
Divide and conquer (for awhile)

Science and Engineering



Divide and conquer (for awhile)

► Classification



Divide and conquer (for awhile)

Classification

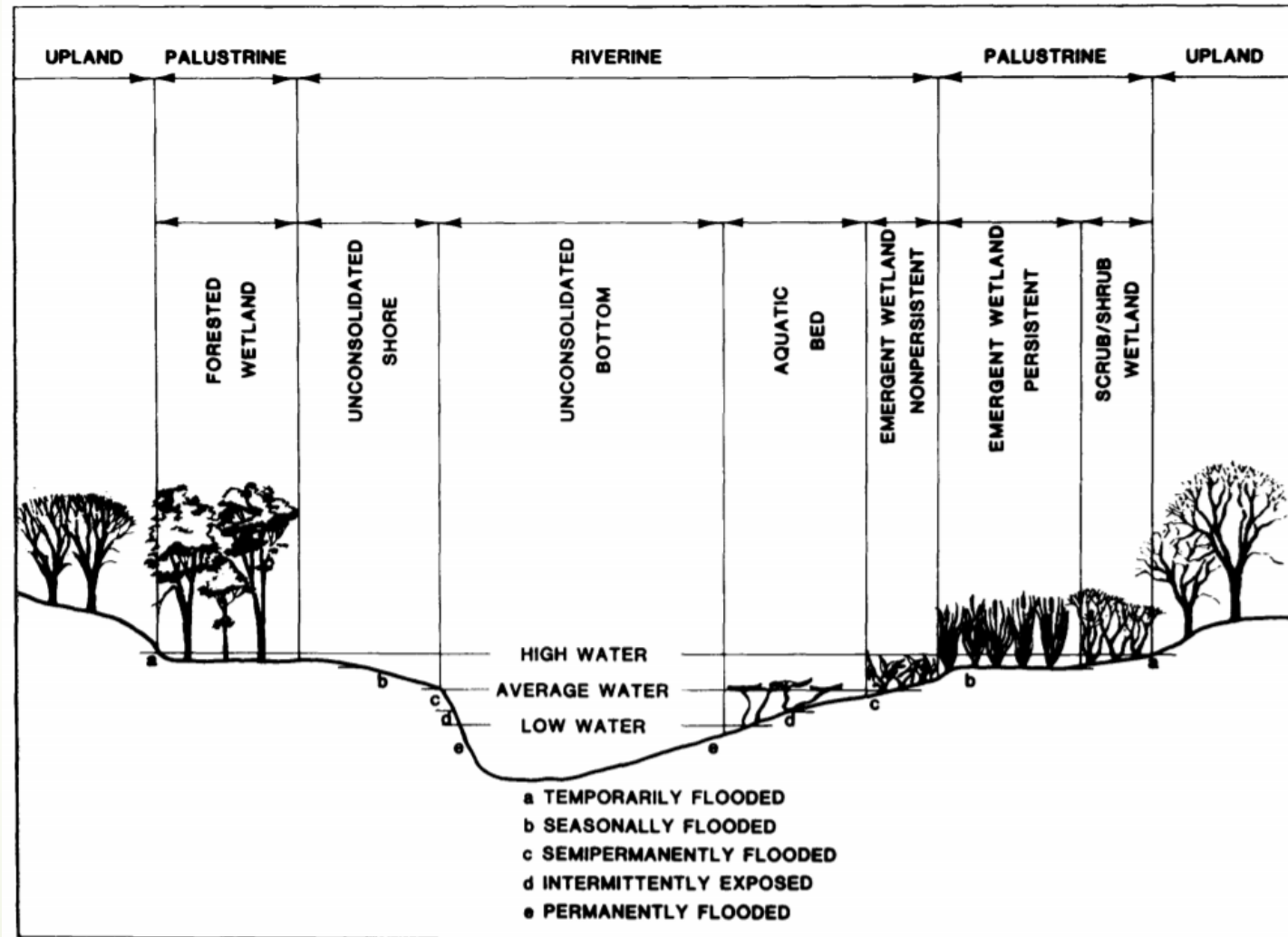
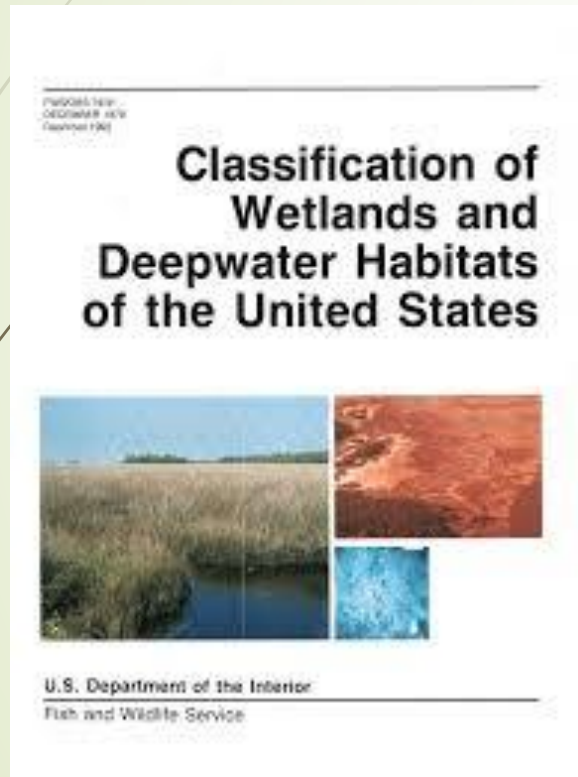


Fig. 4. Distinguishing features and examples of habitats in the Riverine System.

Reunite (for awhile)



US Army Corps
of Engineers
Waterways Experiment
Station

Wetlands Research Program Technical Report WRP-DE-11

A Guidebook for Application of Hydrogeomorphic Assessments to Riverine Wetlands

by Mark M. Brinson, Richard D. Rheinhardt, F. Richard Hauer,
Lyndon C. Lee, Wade L. Nutter, R. Daniel Smith, Dennis Whigham



December 1995 – Operational Draft
Approved For Public Release; Distribution Is Unlimited



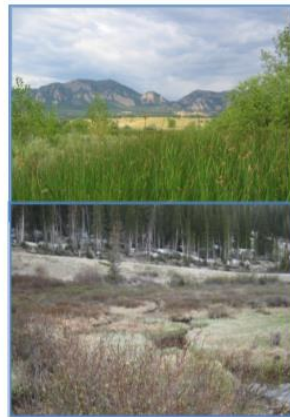
Divide and conquer (for awhile)

Regulatory

Colorado Department of Transportation's FUNCTIONAL ASSESSMENT OF COLORADO WETLANDS (FACWet) METHOD

USER MANUAL – Version 3.0

April 2013



Colorado
State
University



Brad Johnson
Department of Biology
Colorado State University

Mark Beardsley and Jessica Doran
EcoMetrics, LLC



Colorado Stream Quantification Tool and Debit Calculator User Manual (Beta Version)



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...

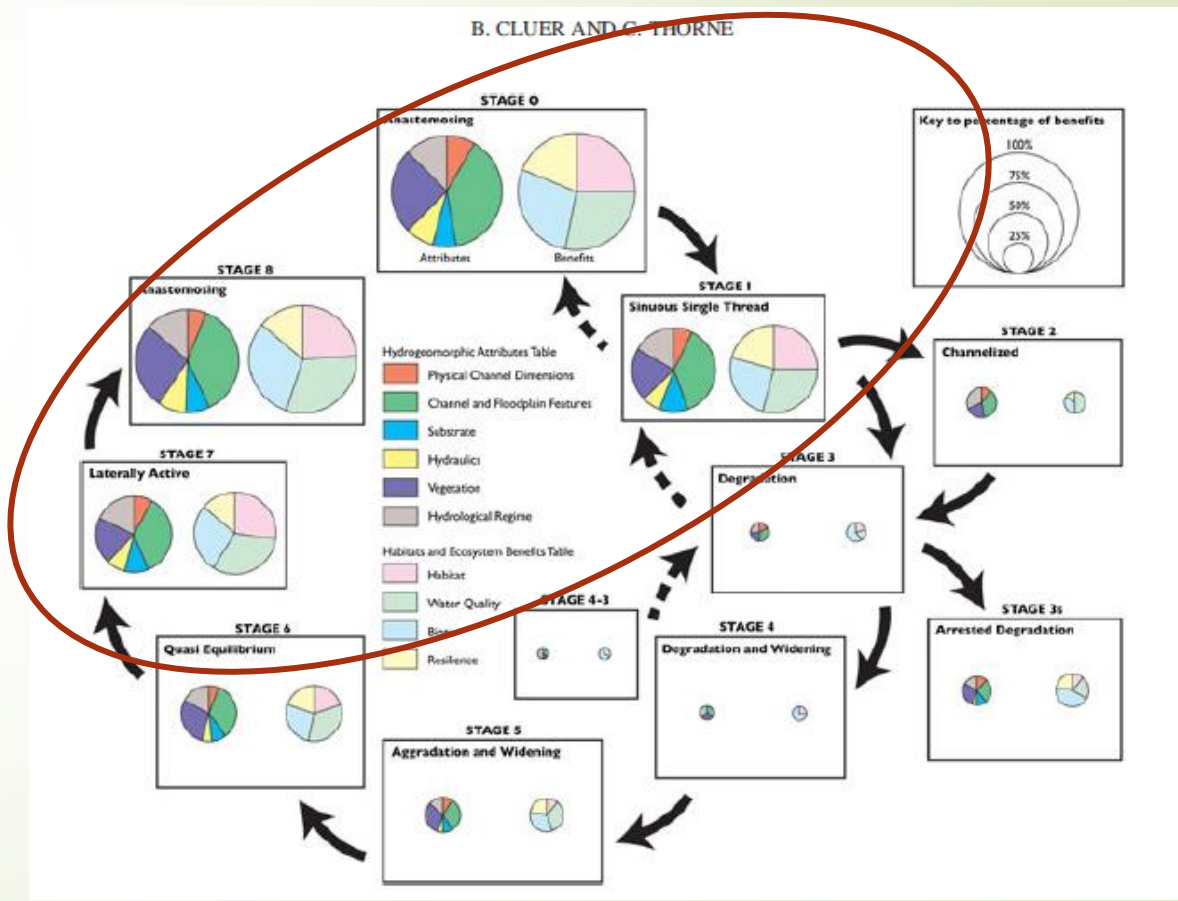
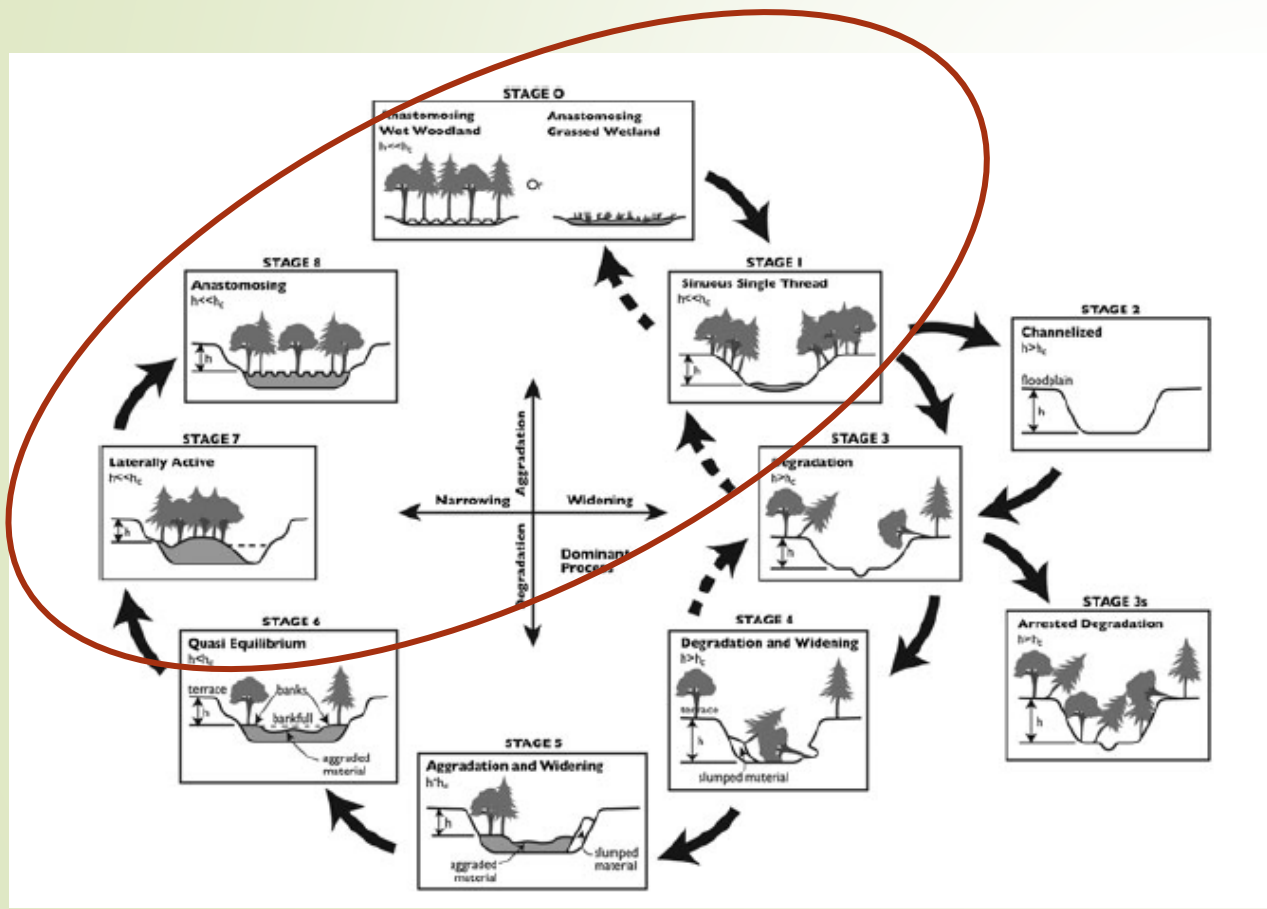


- Need to Use and Control these systems differently

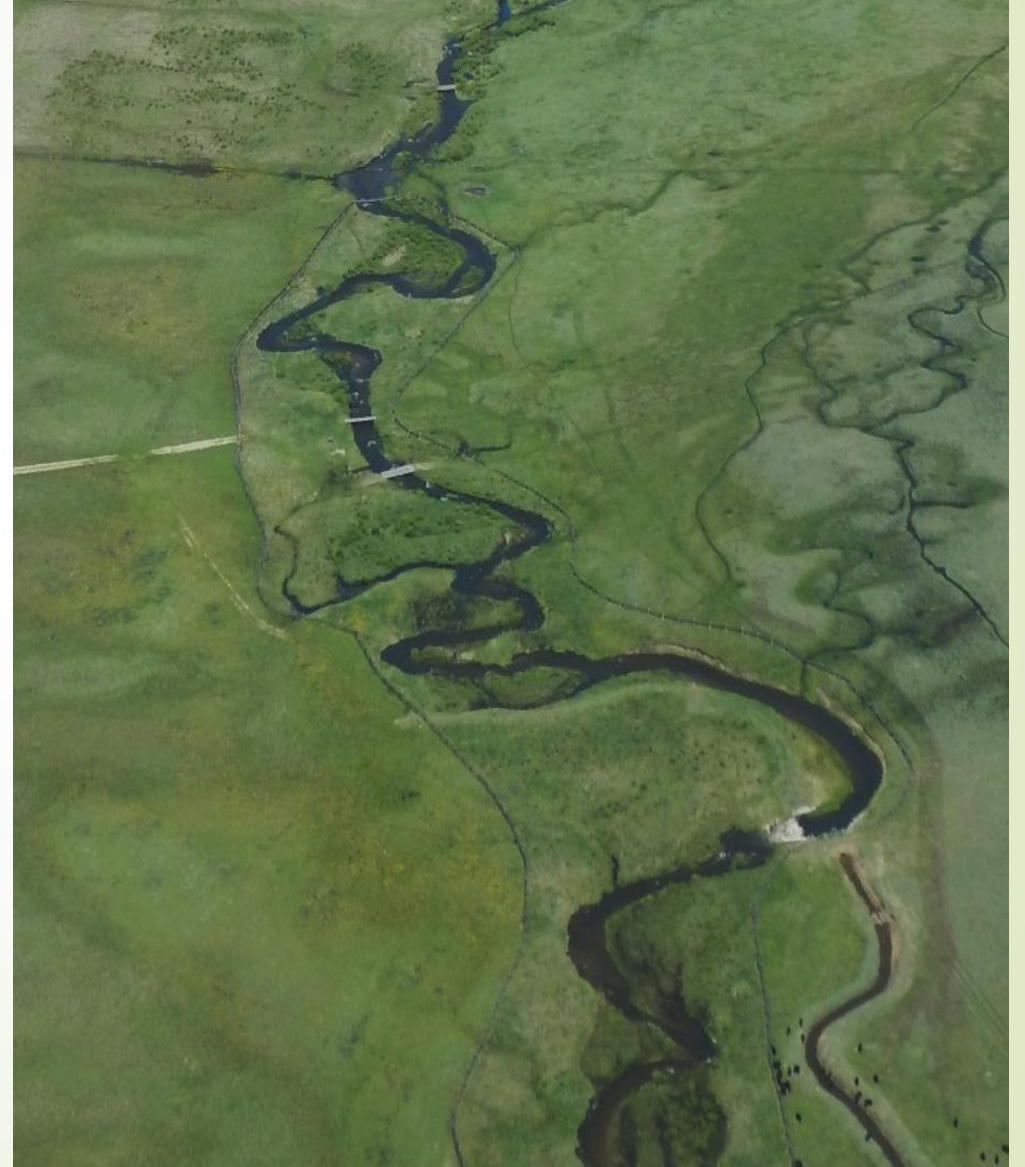
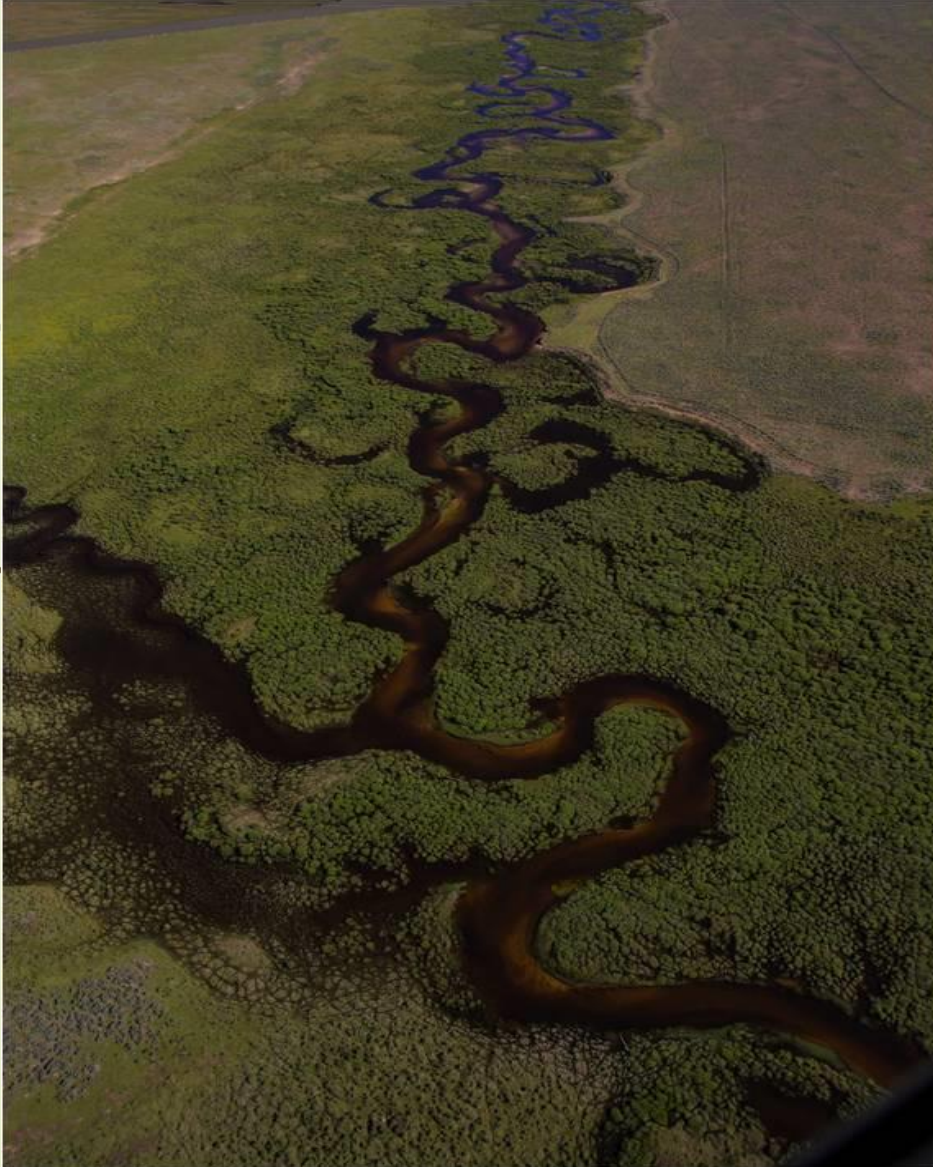


Reunited and it feels so good...

- Maximize watershed health, ecosystem services and resiliency



Might as well fix what is broken...



Might as fell fix what is broken...



Re-engendering Resilience

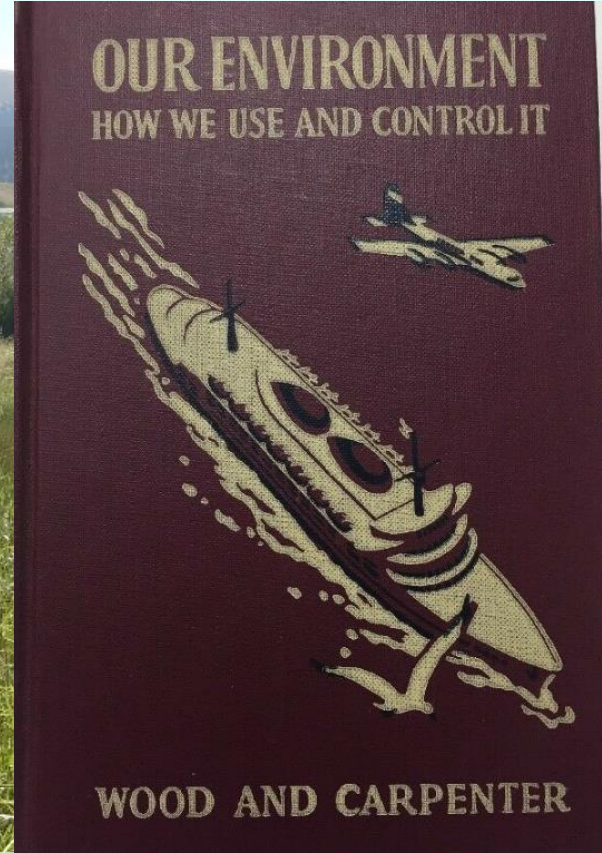




You only see what you look at

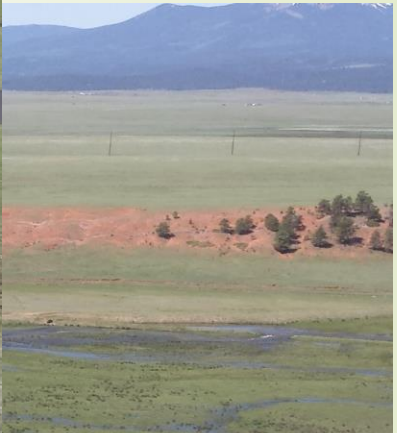
- Defining restoration goals, success or performance standards and assessments

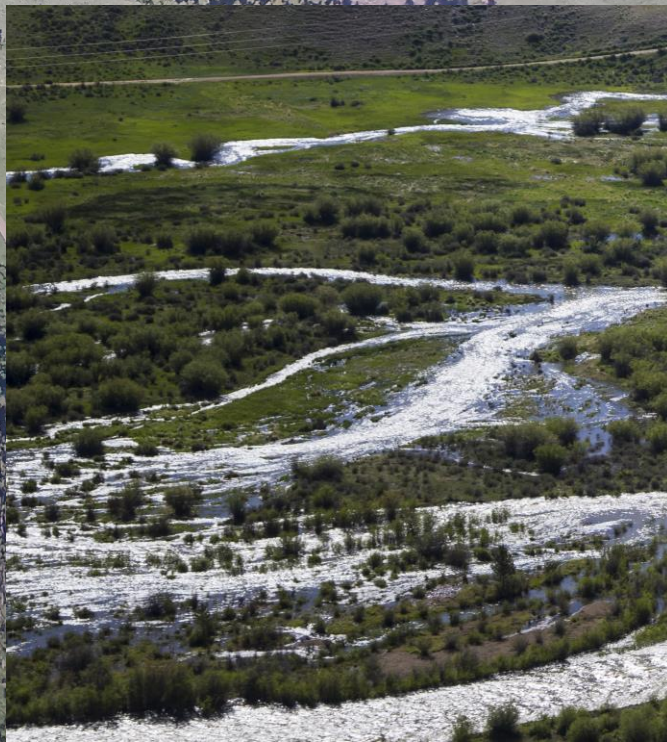




- ▶ We need the ecosystem services provided by headwater streams for our continued health and survival
- ▶ Subtle, insidious, commonplace segregation of channel and riparian in headwaters systems leads to misconception and poorly functioning streams
- ▶ Work in channels can be valuable but it should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









But these guys did

