

A photograph of a forest stream with tall grasses in the foreground and trees in the background. The text is overlaid on the image.

**WATERSHED AND UPLAND  
DISTURBANCE FACTORS: THEIR  
IMPACTS ON RIPARIAN AREAS**



# THE SETTING

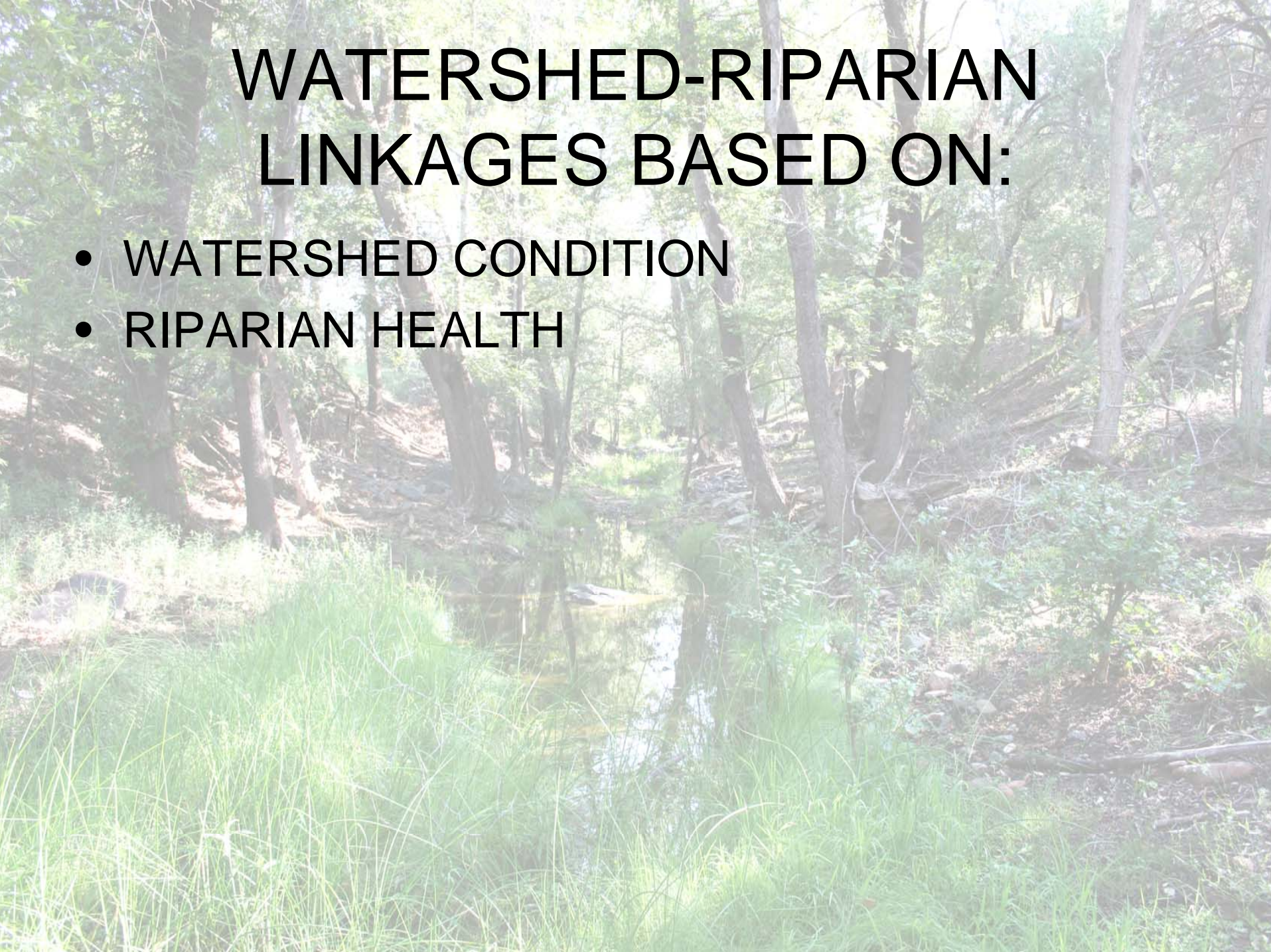
- ABOVE 7,000 FEET
- BETWEEN 3,500 AND 7,000 FEET
- BELOW 3,500 FEET





# WATERSHED-RIPARIAN LINKAGES BASED ON:

- WATERSHED CONDITION
- RIPARIAN HEALTH





# **WATERSHED CONDITION DETERMINED BY:**

- **CAPACITY TO ABSORB RAINFALL ENERGY**
- **COMPARATIVE INFILTRATION RATES**
- **RELATIVE WATER-STORAGE CAPACITY**
- **RATES OF RELEASING WATER**



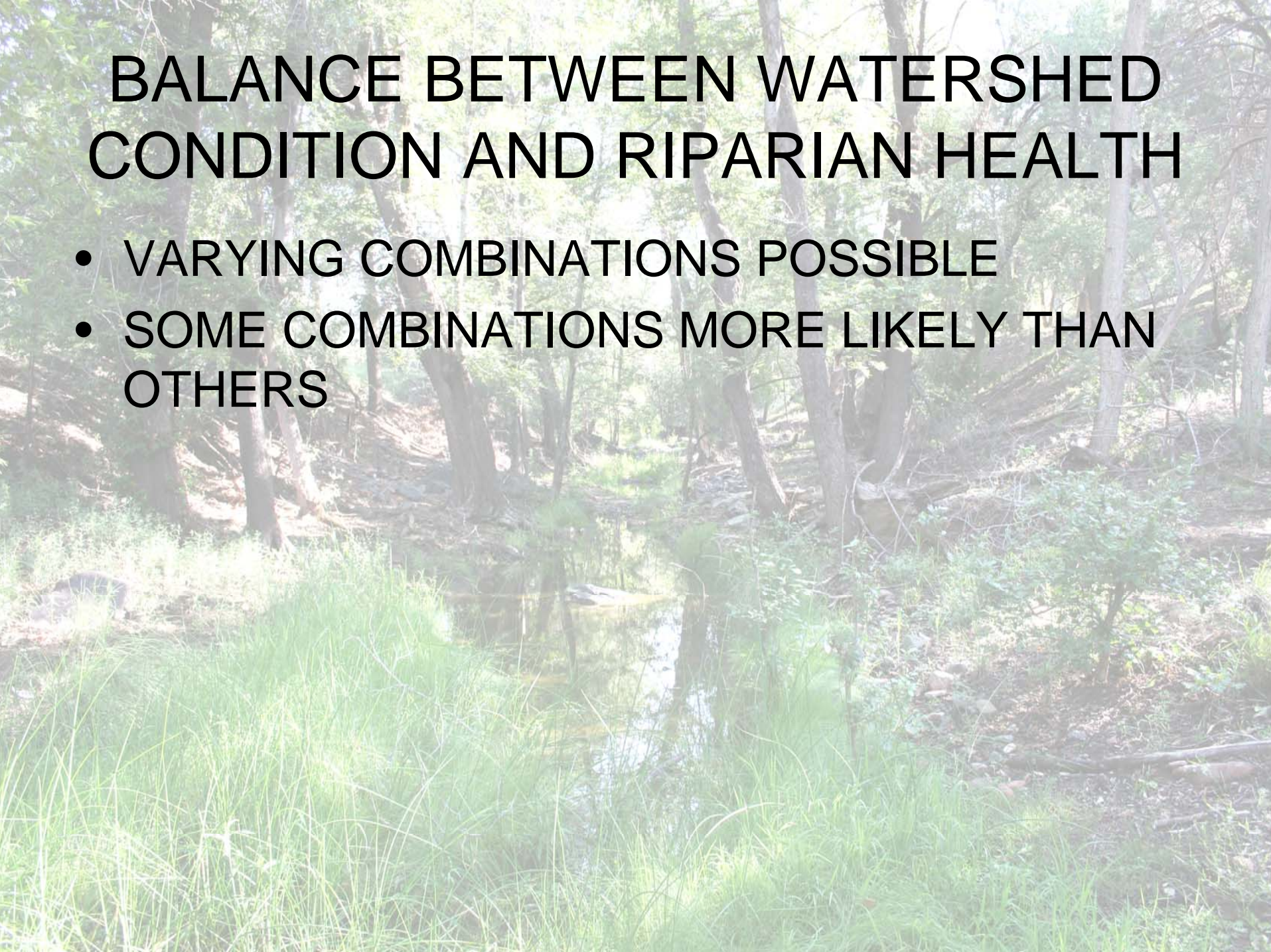
# RIPARIAN HEALTH A FUNCTION OF:

- RELATIONSHIP OF INCOMING (AGGRADATION) TO OUTGOING (DEGRADATION) SEDIMENT
- CAPACITY TO MAINTAIN A DYNAMIC EQUILIBRIUM



# BALANCE BETWEEN WATERSHED CONDITION AND RIPARIAN HEALTH

- VARYING COMBINATIONS POSSIBLE
- SOME COMBINATIONS MORE LIKELY THAN OTHERS





# DYNAMICS OF RIPARIAN HEALTH

- DYNAMIC EQUILIBRIUM WHEN VOLUME OF INCOMING SEDIMENT EQUALS OUTGOING SEDIMENT
- LITTLE CHANGE IN TENDENCY TO MAINTAIN DYNAMIC EQUILIBRIUM



# DYNAMIC EQUILIBRIUM IN BALANCE WHEN:

- STREAMFLOW FORCES ACTING TO PRODUCE CHANGE AND GEOMORPHIC, VEGETATIVE AND STRUCTURAL RESISTANCE TO THIS CHANGE ARE MAINTAINED
- INTERNAL ADJUSTMENTS OCCUR WITHOUT OVERWHELMING THE EQUILIBRIUM



# DYNAMIC EQUILIBRIUM OUT OF BALANCE WHEN:

- SYSTEM NO LONGER ADJUSTS TO CHANGES
- RIPARIAN ECOSYSTEM THROWN OUT OF EQUILIBRIUM FASTER AND MORE PERMANENTLY DEGRADATION THAN AGGRADATION PROCESSES



# CAUSES:

- TREE CUTTING ACTIVITIES
- WILDFIRE AND INSECT OUTBREAKS
- DROUGHT CONDITIONS
- INVASIVE SPECIES



# DOWNSTREAM IMPACTS

- LINKAGES
  - PHYSICAL- STREAMFLOW AND SEDIMENT
  - CHEMICAL- NUTRIENTS AND CHEMICALS
  - BIOLOGICAL- ORGANIC DEBRIS





- **MOVEMENT**

- **PLUSES IN EPHEMERAL (INTERMITTENT) STREAMS**

- **LESS EPISODIC IN PERENNIAL STREAMS**



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- **IMPACTS**
    - **HYDROLOGIC ALTERATIONS**
    - **WATER QUALITY CHARACTERISTICS**
    - **AQUATIC HABITATS**



A photograph of a forest stream. In the foreground, there is a dense patch of tall, green grasses. The stream flows through the center, reflecting the surrounding trees and sky. The background is filled with a variety of trees, including some with thick, textured bark and others with thinner trunks. The overall scene is a lush, green woodland environment.

- **TIMING**

- **CONDITIONS OCCURRING DOWNSTREAM  
LAG BEHIND PROCESSES OCCURRING  
UPSTREAM**



# CONCLUDING COMMENTS

- NO LONGER ONLY A SOURCE OF WATER
- OTHER ENVIRONMENTAL SERVICES IMPORTANT
- HOLISTIC VIEWPOINT CONSIDERED