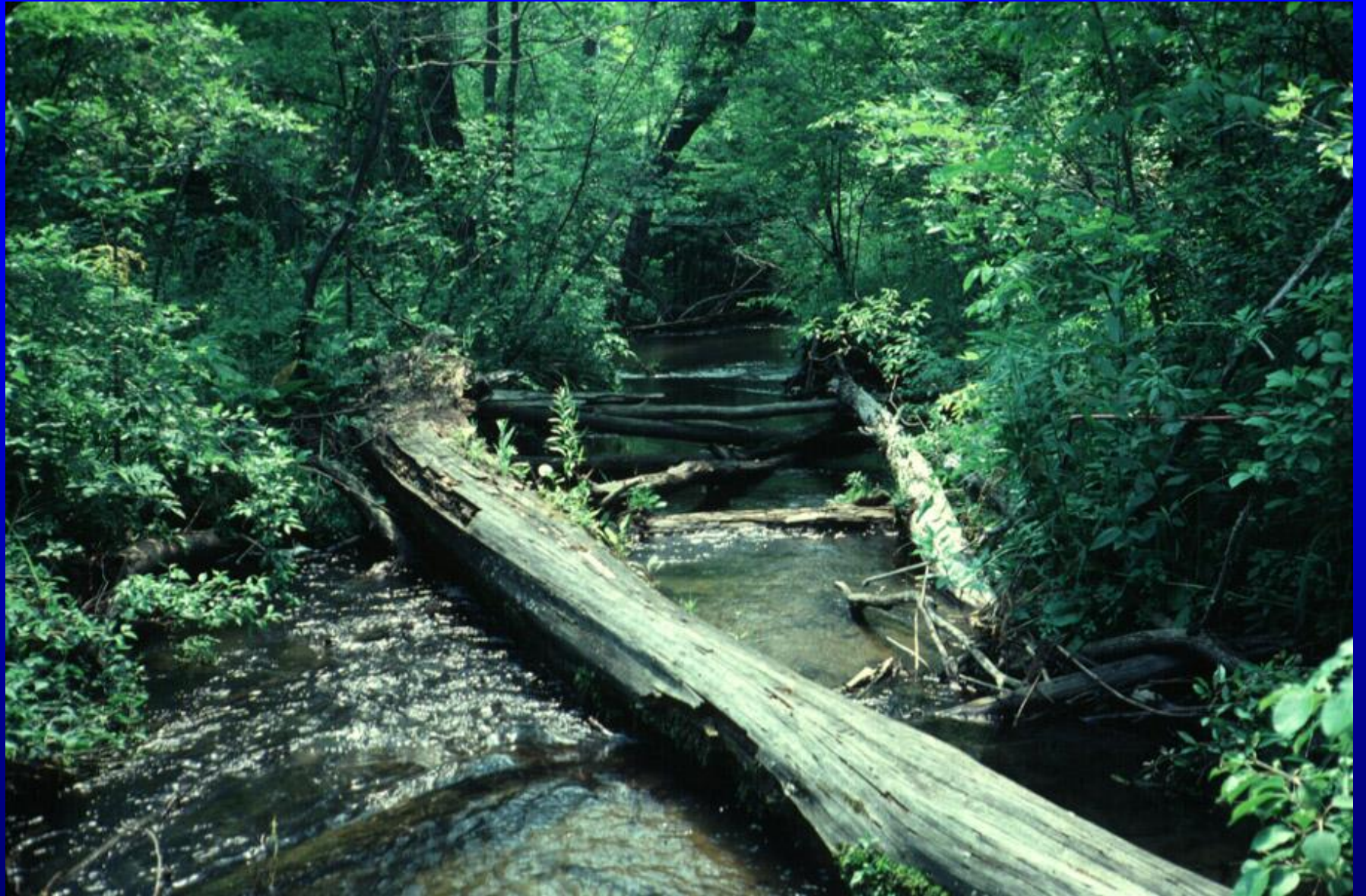


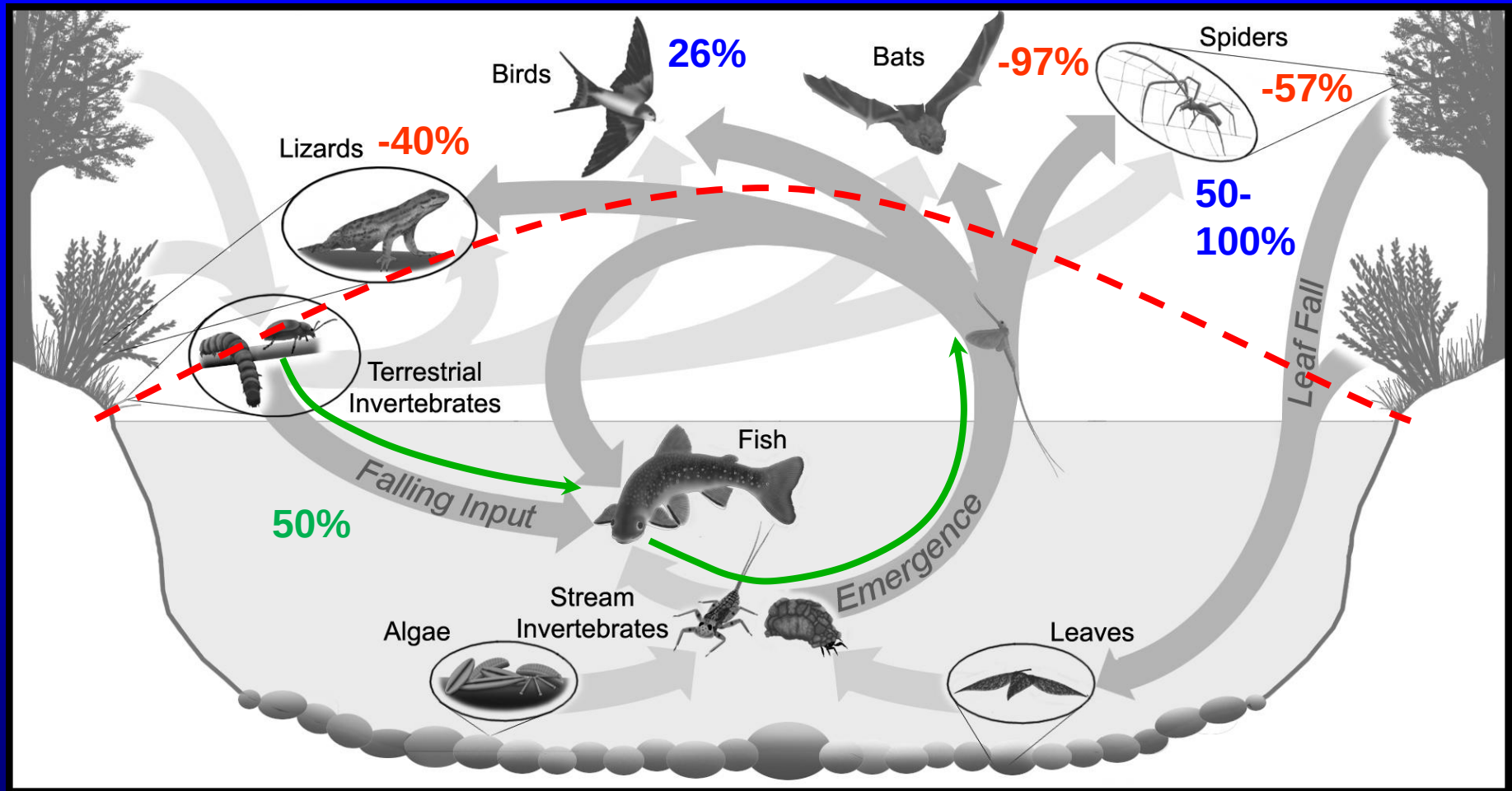


Trout invasions and cattle grazing can have large effects on predators like spiders and trout in adjacent habitats by reducing invertebrate prey subsidies

Kurt Fausch, Joe Benjamin, Carl Saunders,
Colden Baxter, and Fabio Lepori
Colorado State Univ. and Idaho State Univ.



Linked Stream-Riparian Ecosystem



Baxter et al. 2005
Illustrations by Jeremy Monroe

Outline

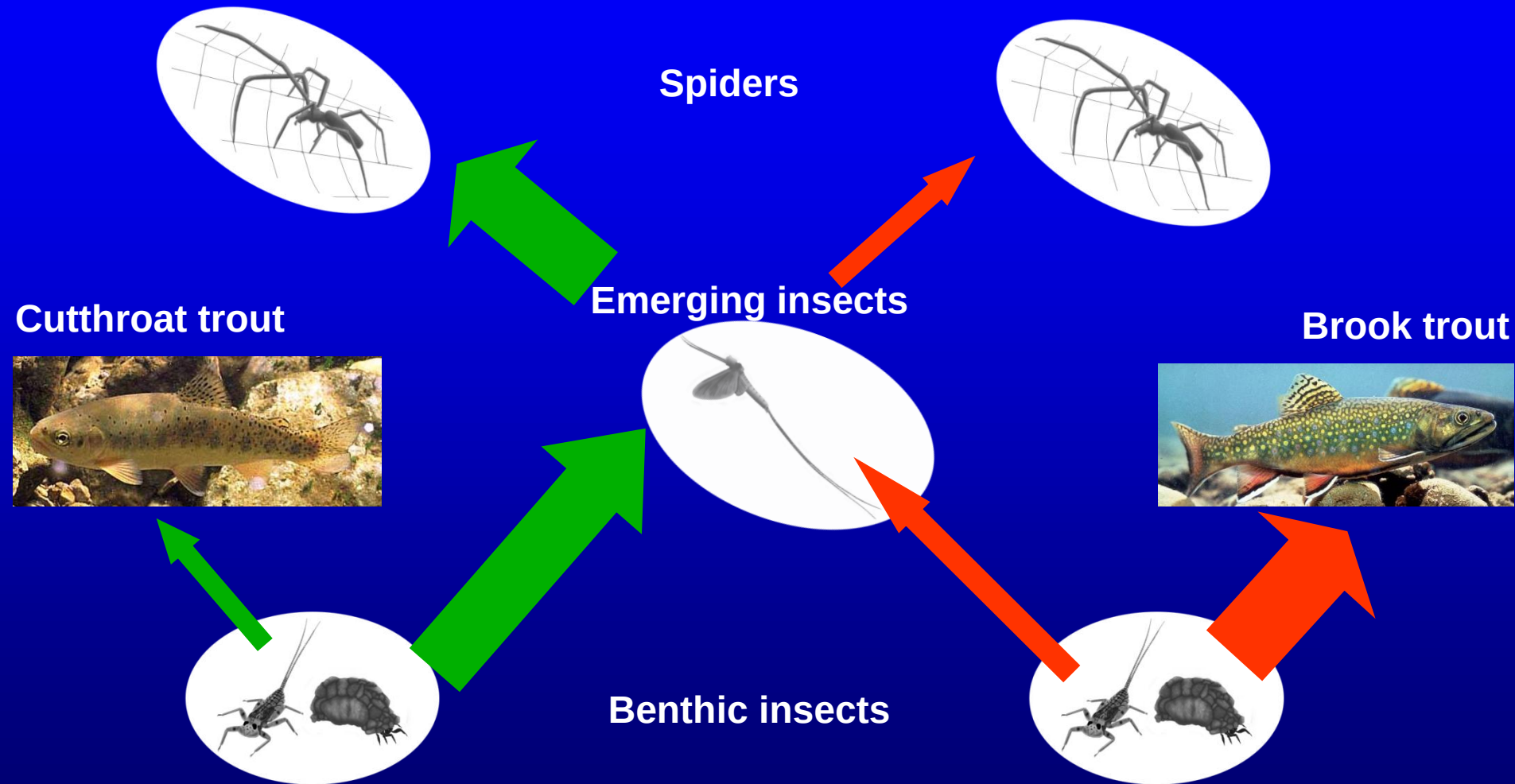
- Two comparative studies of single stressors
 - Species replacement by nonnative trout
 - Livestock grazing of riparian zones
- Synergistic effects of multiple stressors
 - Experiment with trout invasion and deforestation effects

Nonnative brook trout invasion

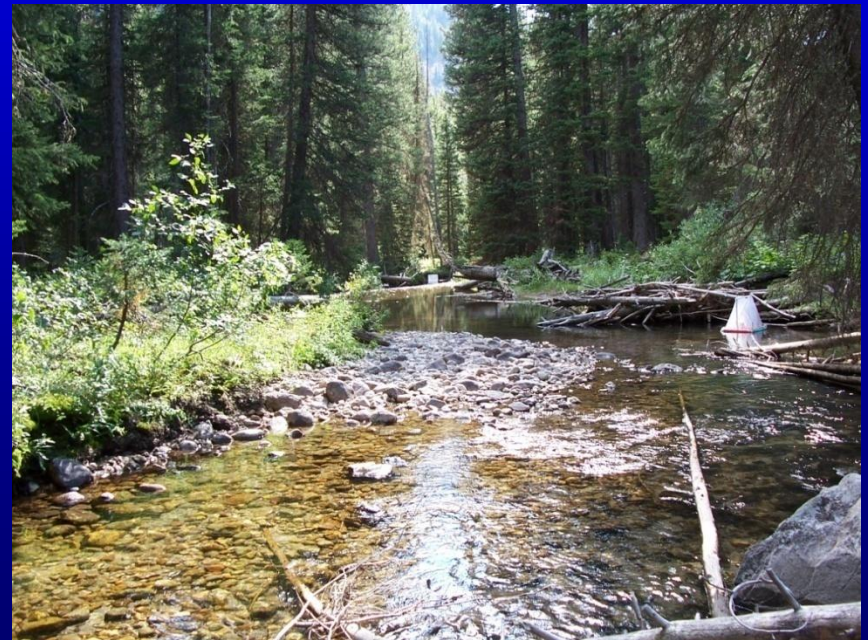
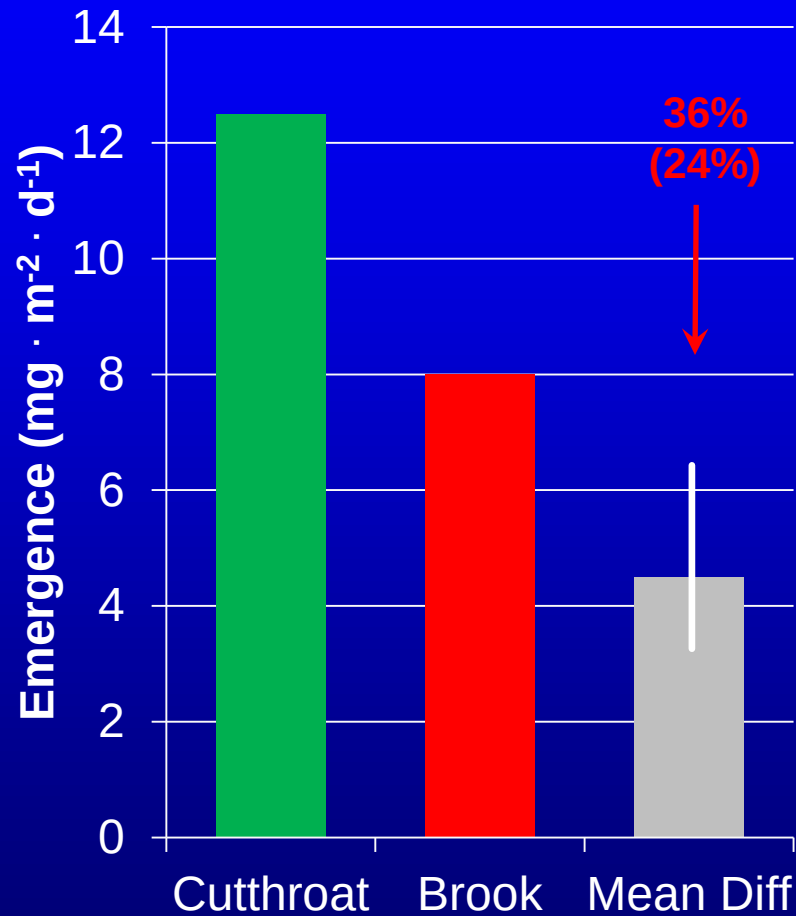
Does species replacement matter?



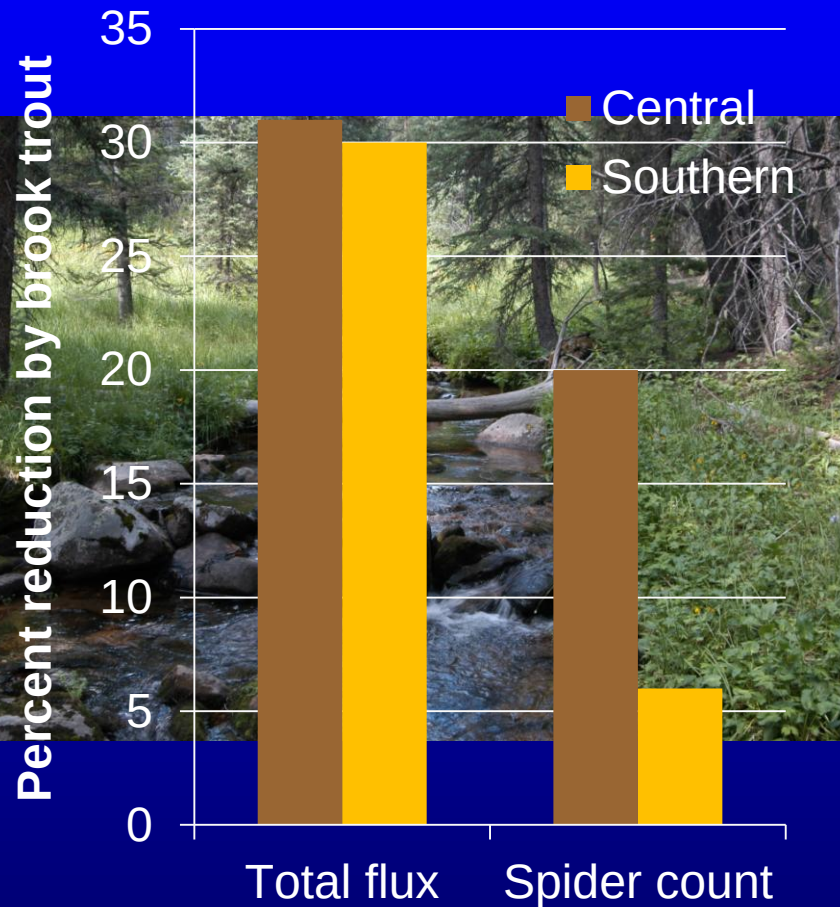
Ecosystem consequences



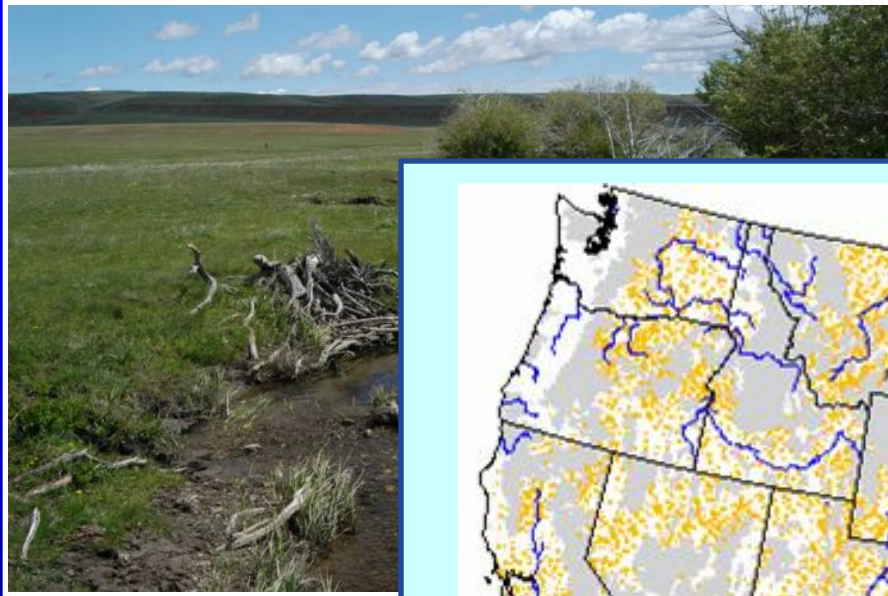
Effects on Emergence Flux



Predicted effects on total flux and spiders

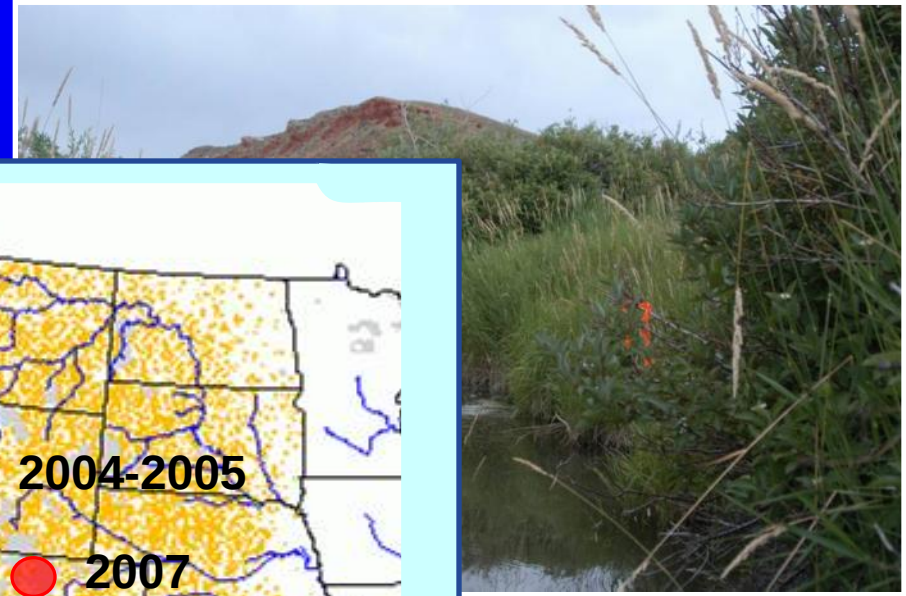


Effects of Grazing on Prey Input to Streams



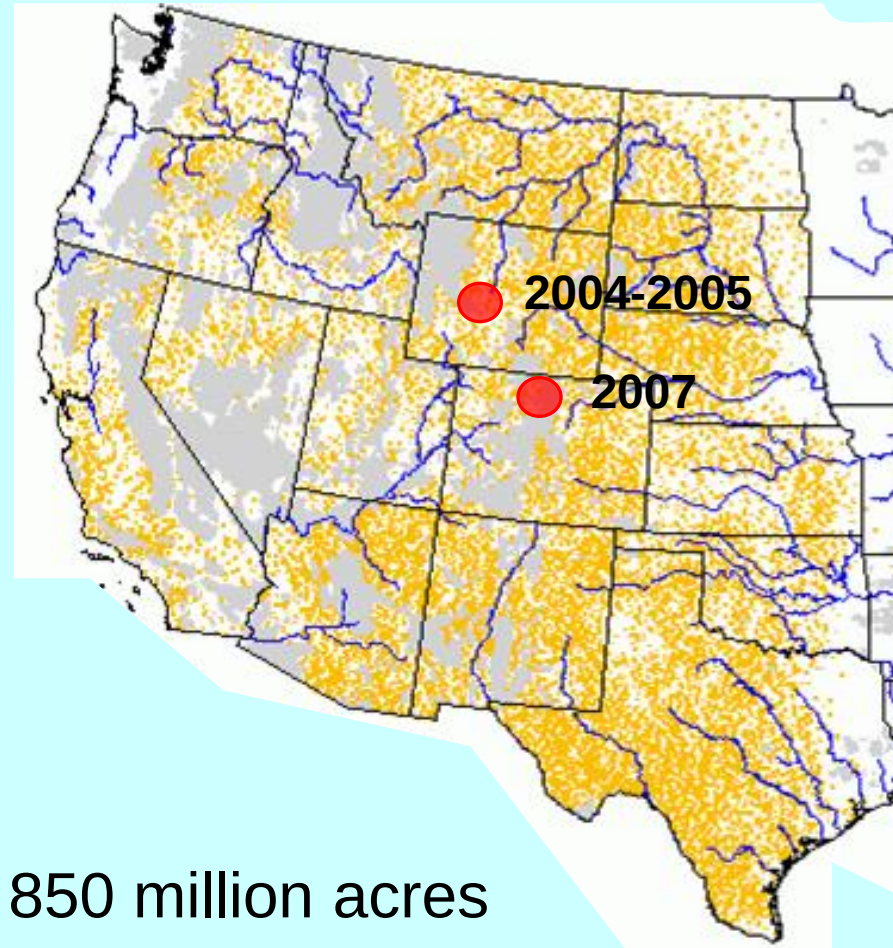
100+ day
season-long

Large pastures



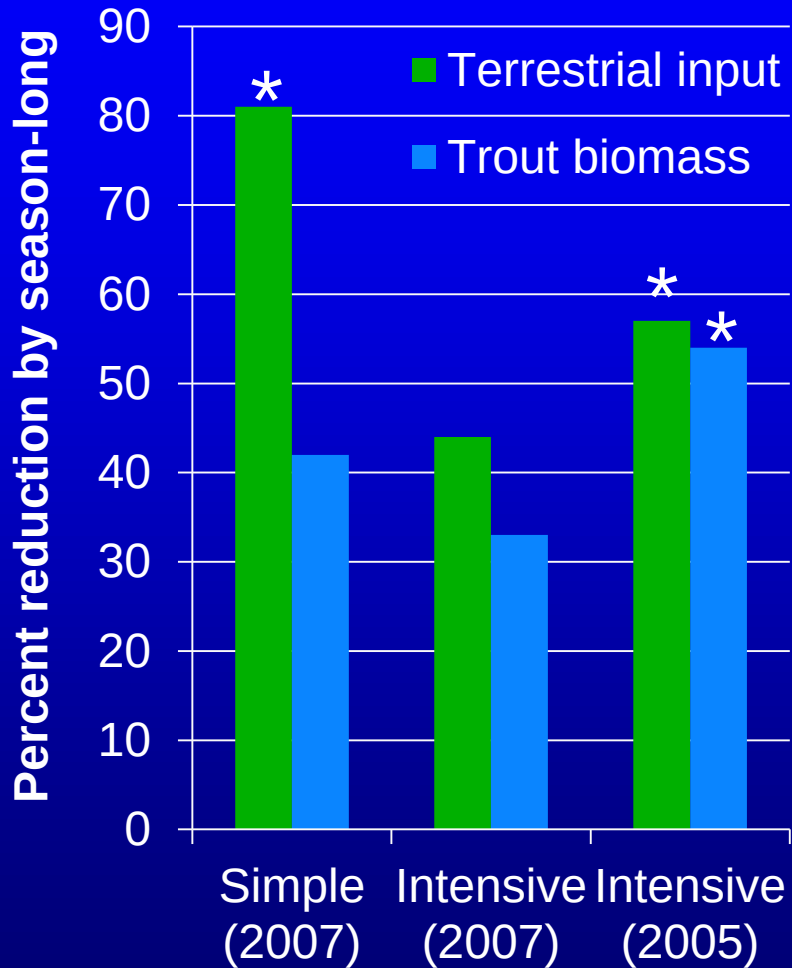
10-30 d
rotational
grazing

Small –
moderate
pastures



850 million acres

Rotational vs. Season-long grazing



Saunders & Fausch (2007; in review)

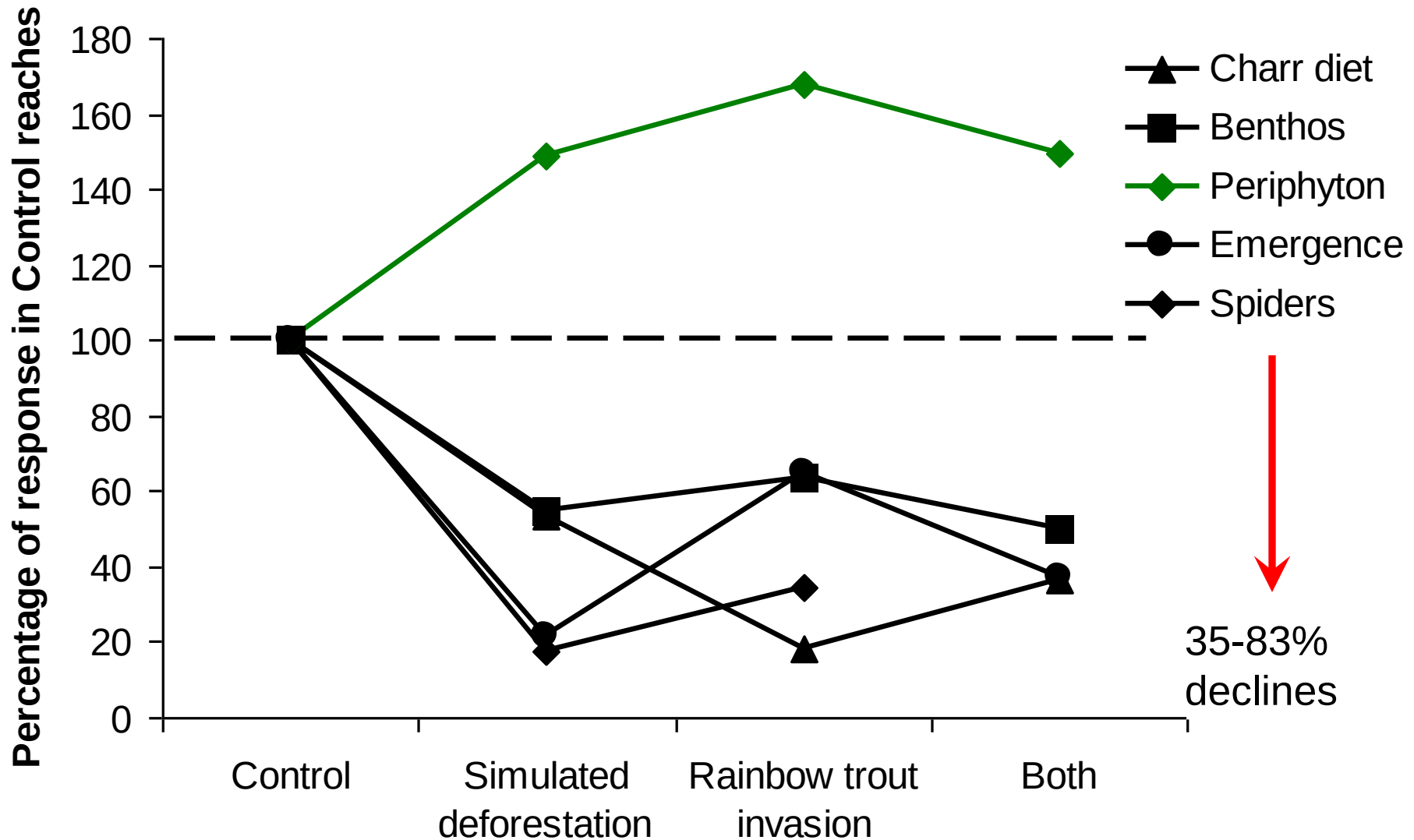


Multiple Stressors: Invasion and Deforestation



Baxter et al. 2004, 2007

Multiple stressors: Effects



Key points

- Individual stressors had large effects in small streams
- Effects propagated across ecosystem boundaries to recipient predators
- Must consider these cross-ecosystem effects in management and restoration



C. Baxter image



C. Torgersen image