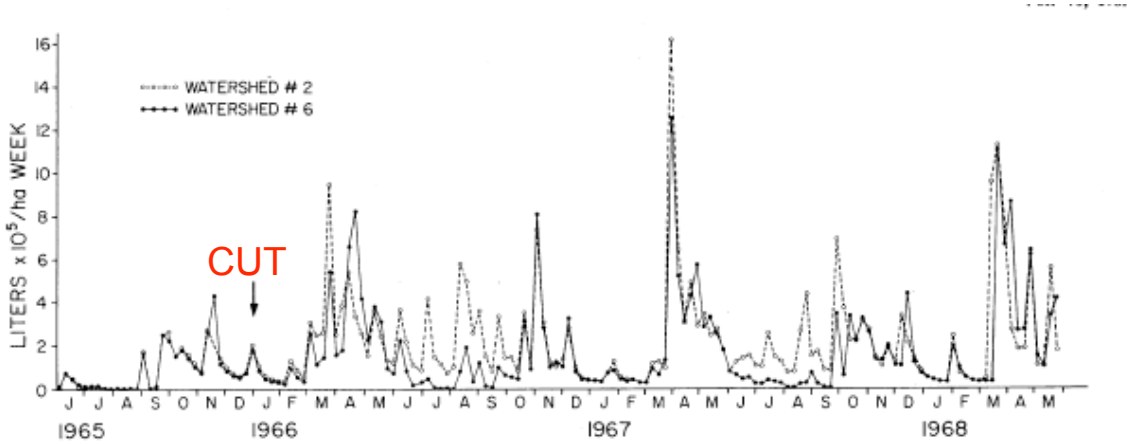
Hubbard Brook Experimental Forest, NH

Herbert Bormann
Gene Likens
Robert Pierce

(and others)

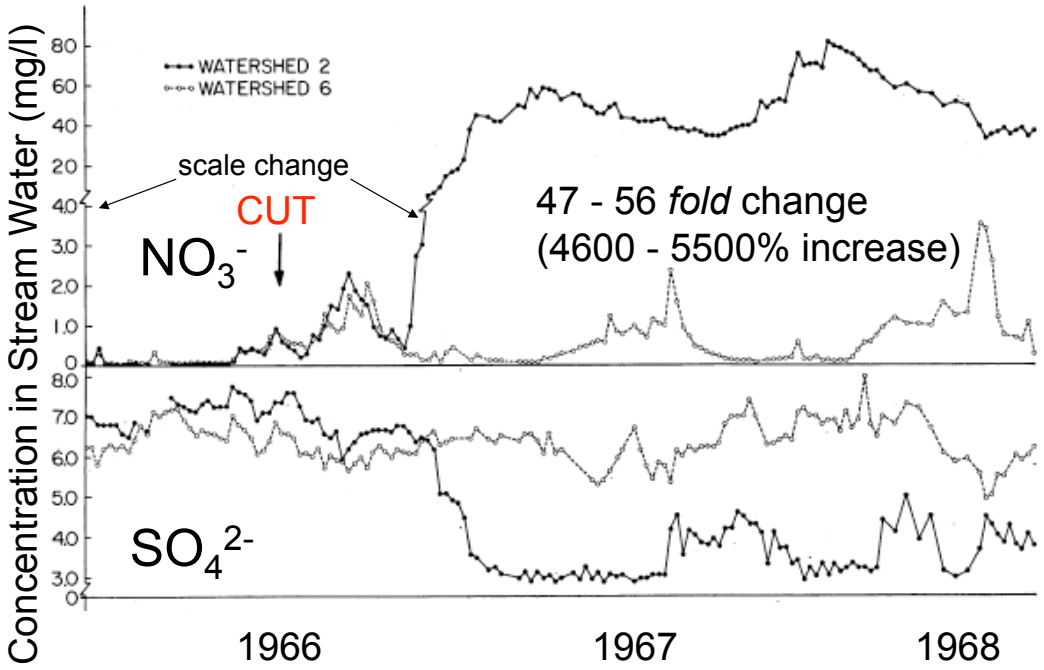
Why would ecologists clear-cut a forest?

Watershed #2 was clearcut in the winter of 1965-66
Herbicide applied in June 1966 to keep regrowth down



Does clearcutting change hydrology?
pH dropped slightly and water temperature increased a little

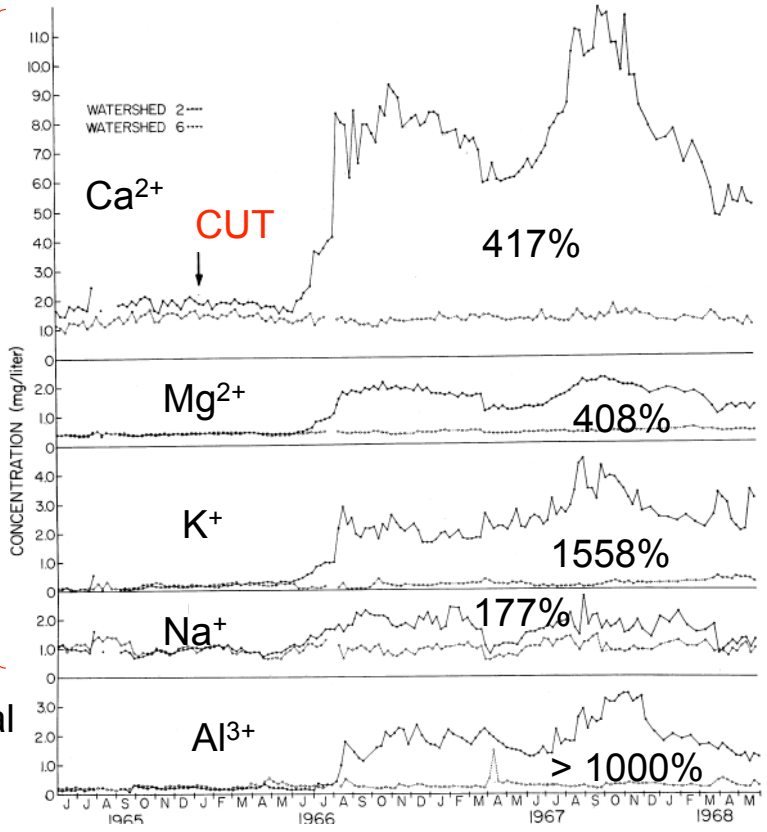
Hubbard Brook Nutrient Cycling

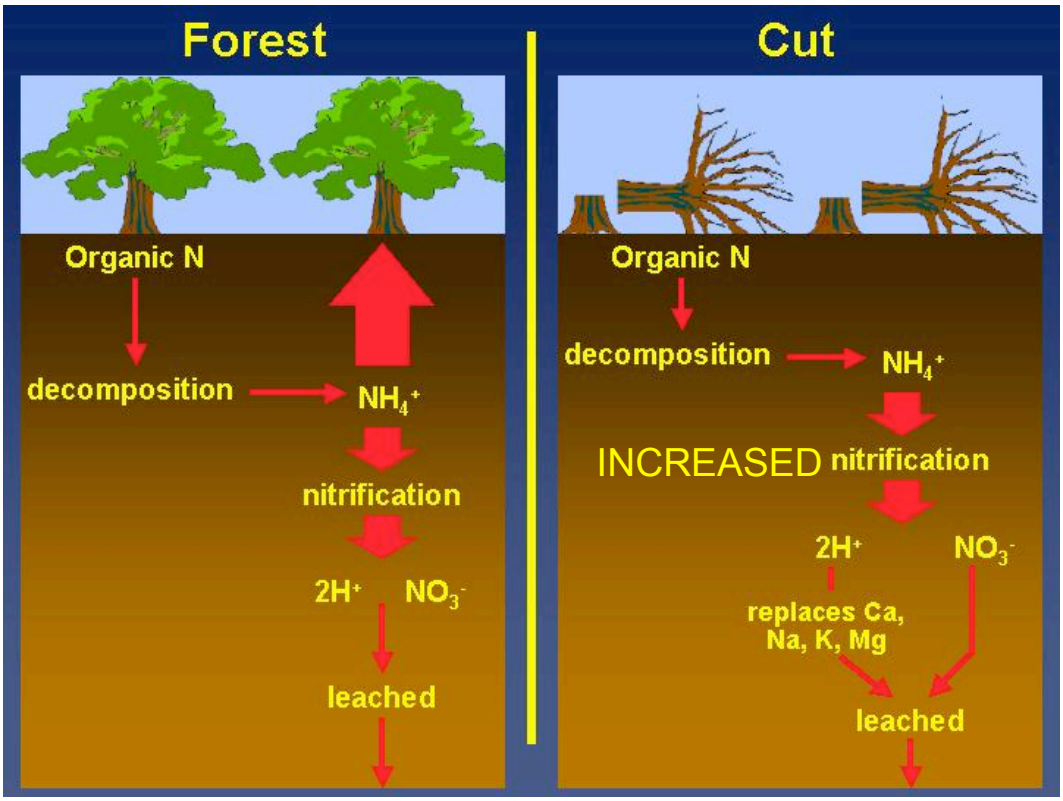


Release of soil cations increased

Mostly organic (humic) sources

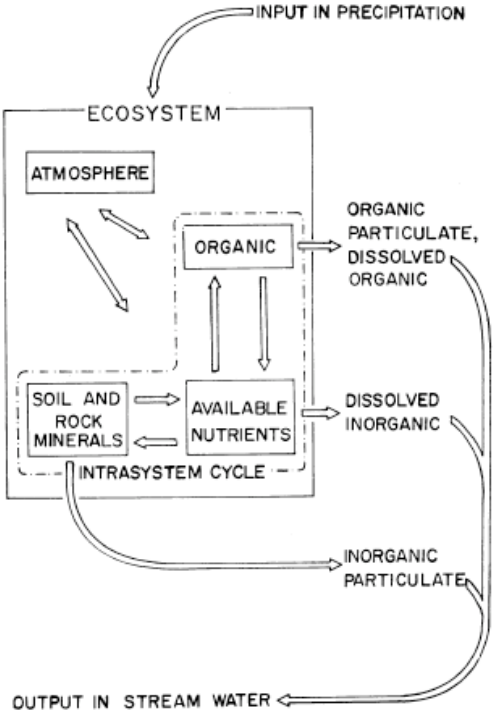
Mostly mineral sources

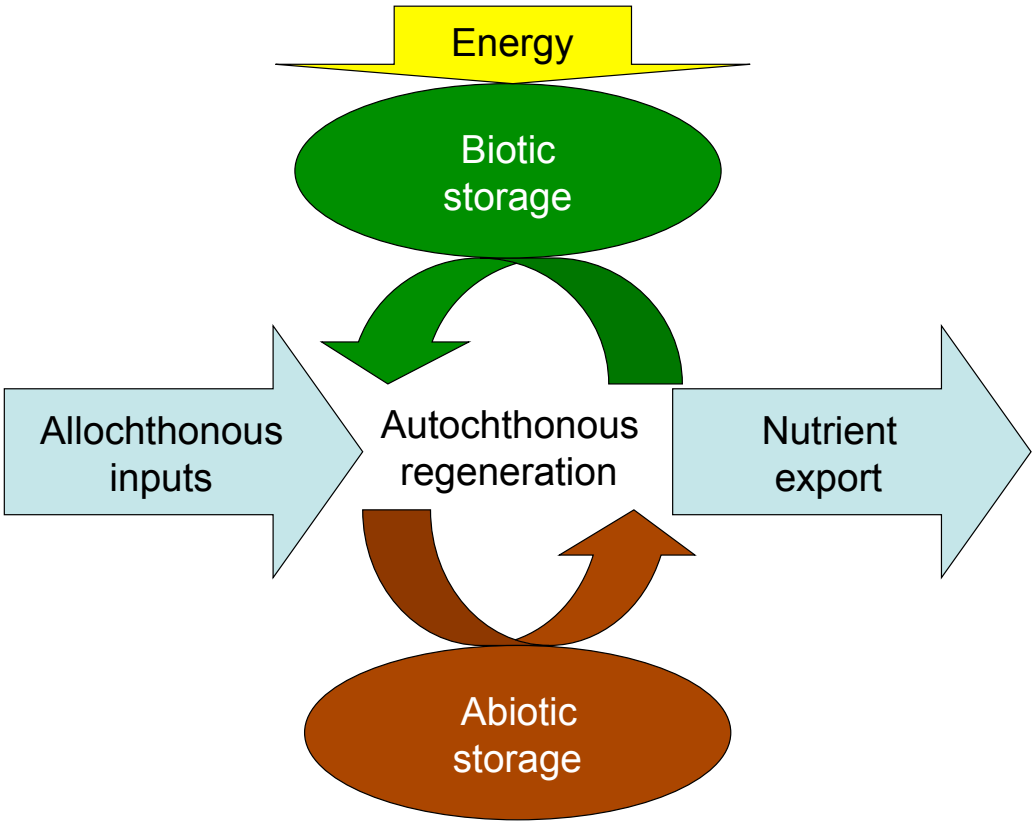


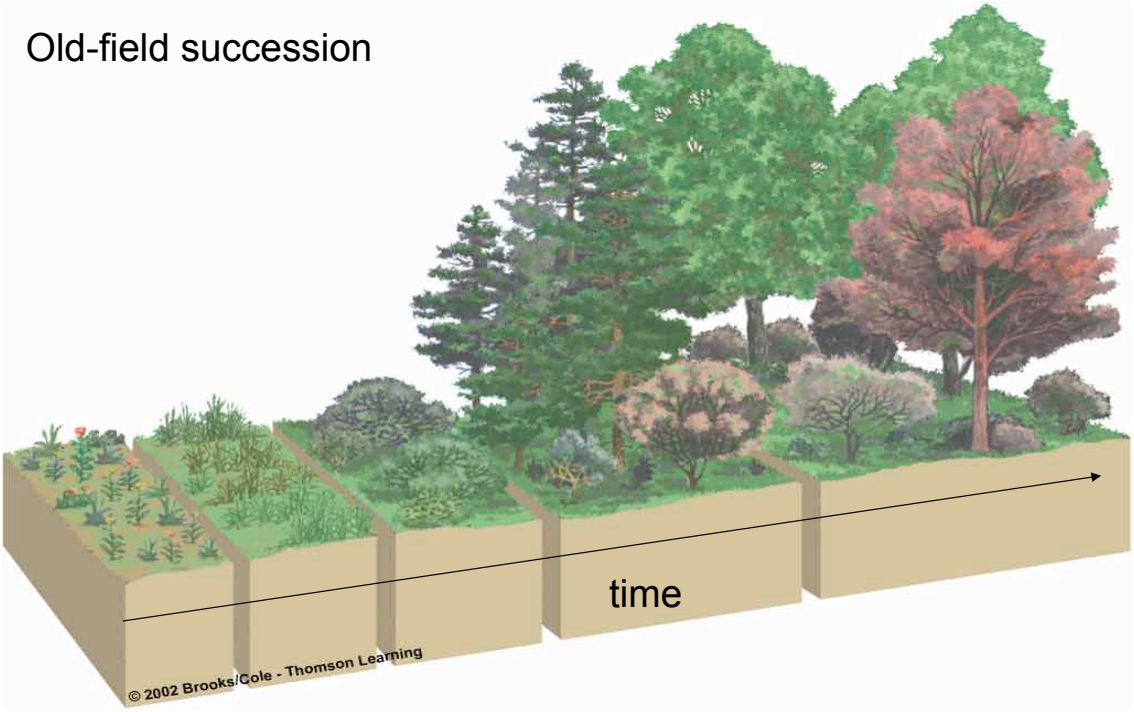


Nutrient retention in the system was impaired

What are the main organisms and processes in the intrasystem cycle?




Energy
Biotic storage
Allochthonous inputs
Autochthonous regeneration
Nutrient export
Abiotic storage


Old-field succession
time
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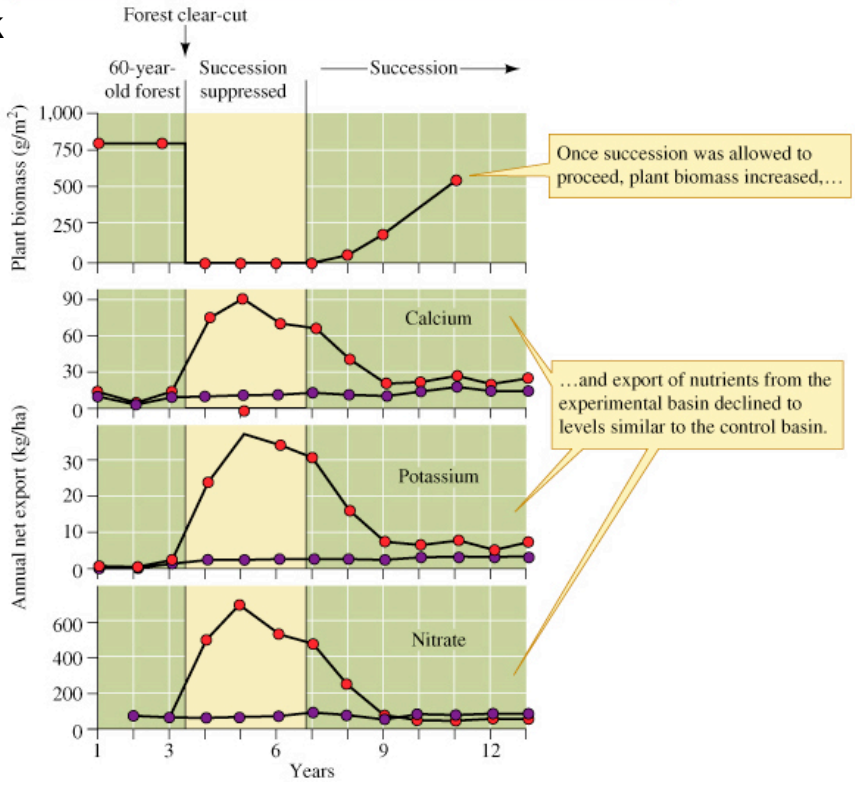
The Hubbard Brook deforestation experiment showed that succession can reduce losses of plant nutrients caused by disturbance.

Hubbard Brook

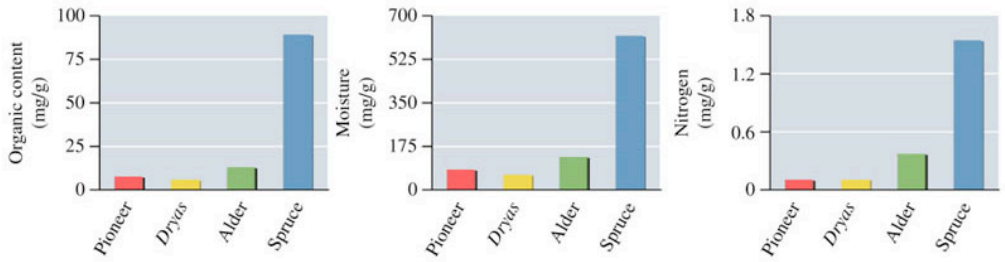
Plant pool

Stream fluxes

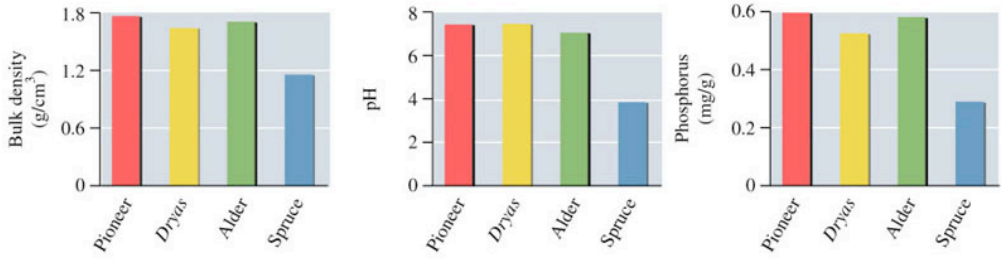


During succession, nitrogen, moisture, and organic matter content increased, …

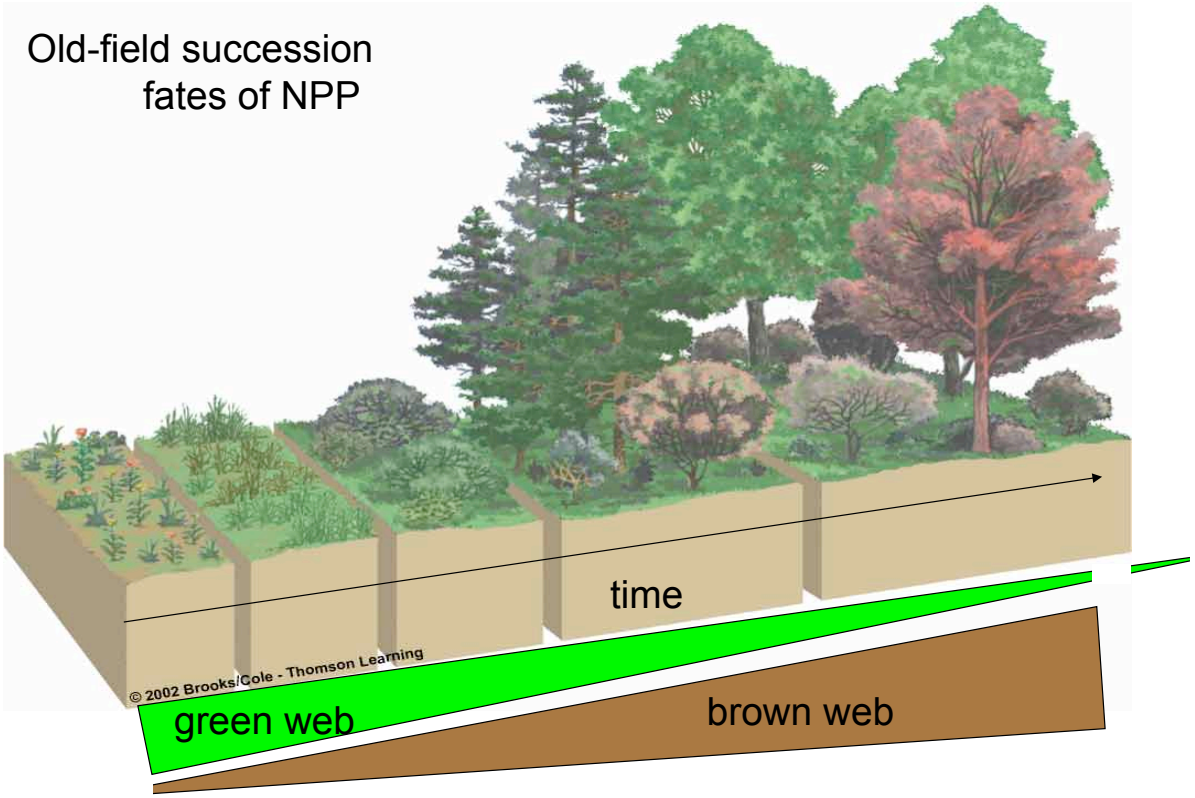
Soil changes during succession



… while phosphorus content, pH, and bulk density decreased.



(Pioneer = 0 years → Spruce = 200+ years)


Old-field succession
fates of NPP
time
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green web
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