Ecosystem engineering in streams.--Textbooks almost always mention competition, predation—these are classic types of species interactions. However, organisms often impact each other ways. Specifically, ecosystem engineering can also be an important pathway by which species alter their environment and each other.

History: long appreciation of ecosystem engineering

e.g., Chucky D (Charles Darwin) studied worms and soil turnover.

Ecosystem engineer—"organisms that directly or indirectly control the availability of resources to other organisms by causing physical state changes in biotic or abiotic materials."

Ecosystem engineering—"physical modification, maintenance, or creation of habitats."

This definition is incredibly broad, it basically includes every organism.

Important because so common?

or

Weakness because ubiquitous?

Allogenic engineers—change environment by modifying existing materials.

E.g., beavers build dams out of trees

Autogenic engineers—change environment via their own structure.

E.g., large aggregations of mussels alter flow pathways in streams

- Through changing habitat, ecosystem engineers can indirectly impact other species and themselves.
- Positive feedback loops
- The habitats that ecosystem engineers create can last for a long time or a short time. This, in essence, lengthens the time scale of impacts and feedbacks.