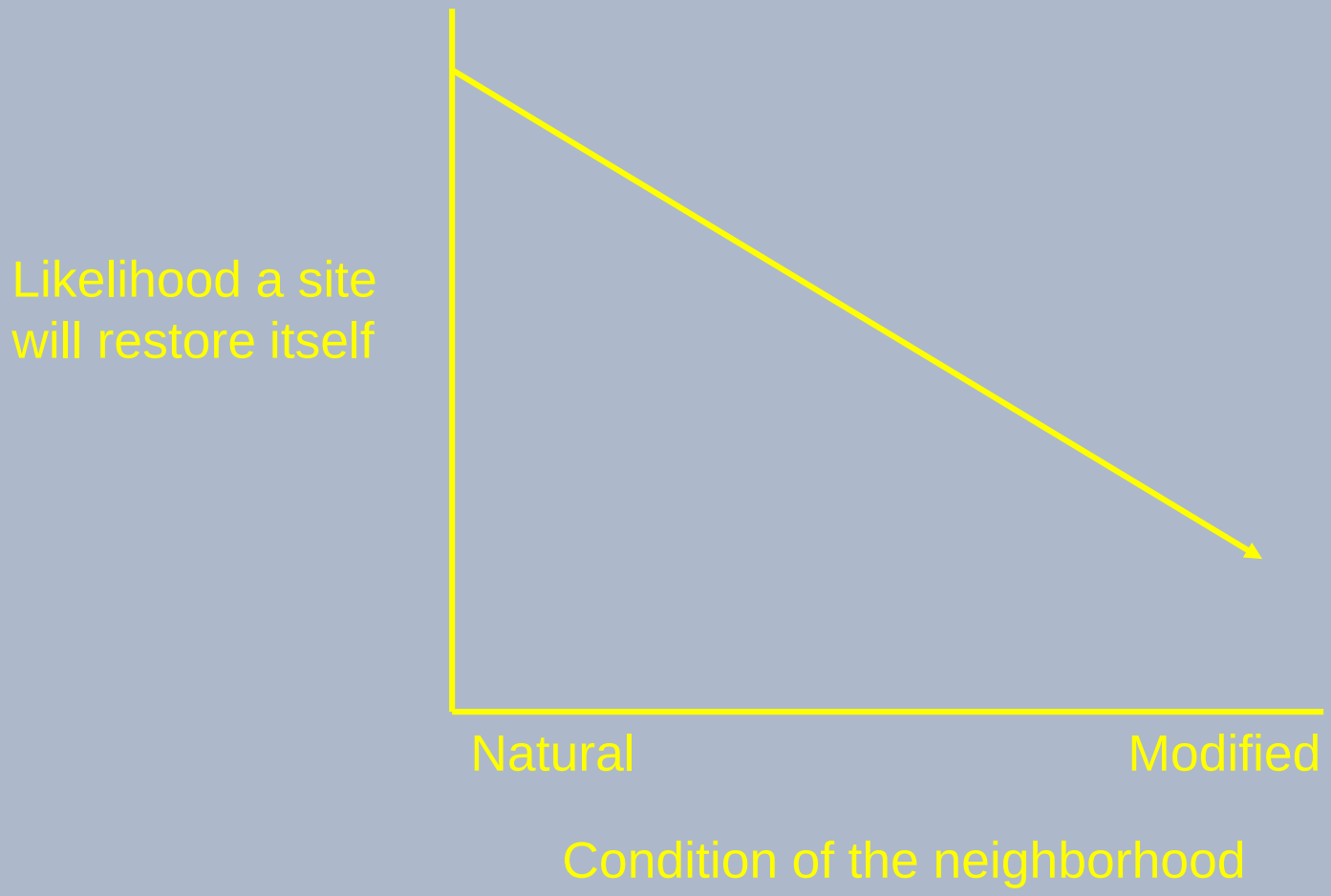
The Ecology in Restoration

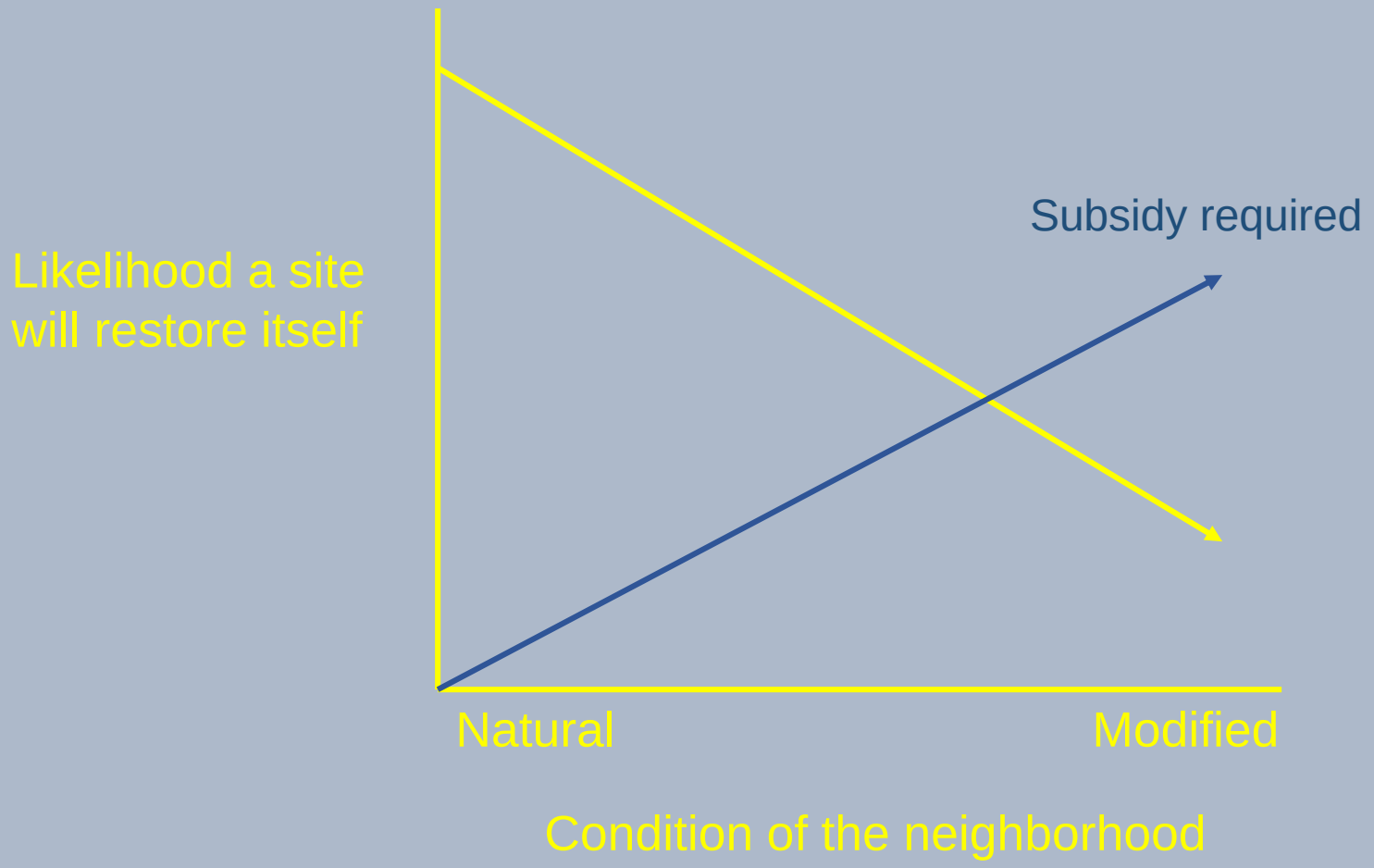
Restoration. Who does the work?

- Available site
  - We prepare the site
- Available plants
  - We put plants in it
- Good growing conditions
  - We take care of it

(Pickett)

Some sites are easier than others


Likelihood a site will restore itself
Natural
Modified
Condition of the neighborhood


Likelihood a site will restore itself
Subsidy required
Natural
Modified
Condition of the neighborhood

Plant response is then governed by the ecology of the site

- We leave the site after 2 years, 5 years
- Plants stick around
- They are governed by the constraints of the site and plant and animal ecology

Ecology

- Plant biology
- Plant strategies
- Plant interactions
- Community characteristics
- Landscape structure

Ecology

- Plant biology
  - Structure
  - Growth rate
  - Light requirement
  - Germination

Ecology

- Plant biology
  - Structure: height, meristem location, aerenchyma, etc.
  - Growth rate
  - Light requirement
  - Germination

- Plant strategies
  - Stress tolerance
  - Resource accumulation
  - Disturbance responders

(Grime)

- Plant strategies
  - Stress tolerance: salinity, drought, cold, nutrients
  - Resource accumulation
  - Disturbance responders

- Interactions
  - Competition
  - Invasions
  - Abiotic factors

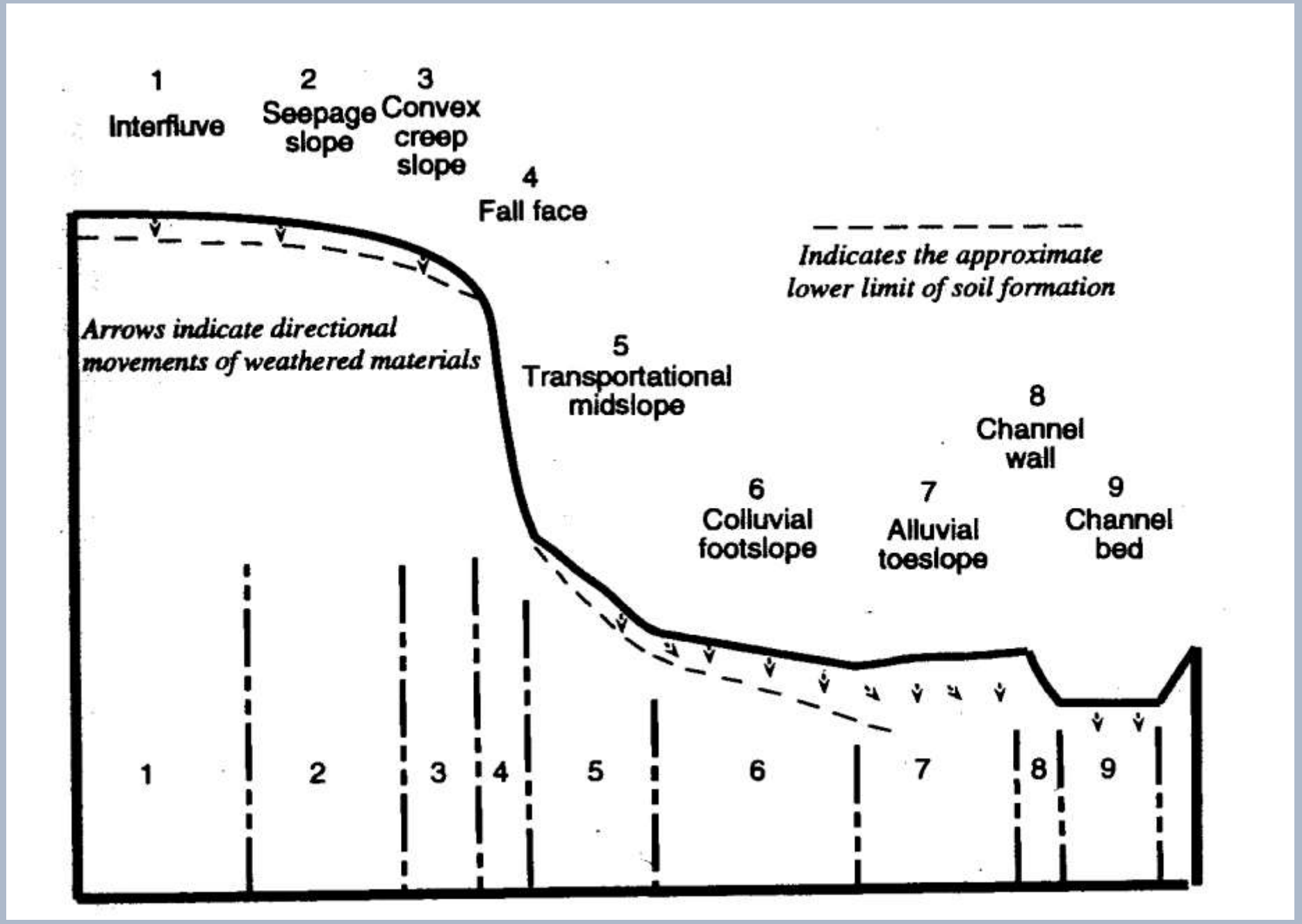
- Interactions
  - Competition: competitors accumulate resources.
  - Invasions
  - Abiotic factors

- Community characteristics
  - Succession
  - Diversity
  - Productivity
  - Resilience/resistance

- Community characteristics
  - Succession: the sequential replacement of species at a site
  - Diversity
  - Productivity
  - Resilience/resistance

- Landscape ecology
  - Dimensional relationships
  - Material flows
  - Landscape dynamics

- Landscape ecology
  - Dimensional relationships
  - Material flows: sediment, organic matter, water, nutrients, seeds, insects
  - Landscape dynamics


1
Interfluve
2
Seepage slope
3
Convex creep slope
4
Fall face
Indicates the approximate lower limit of soil formation
Arrows indicate directional movements of weathered materials
5
Transportational midslope
8
Channel wall
6
Colluvial footslope
7
Alluvial toeslope
9
Channel bed
1
2
3
4
5
6
7
8
9

Topics

- Succession
- Invasiveness
- Functional resilience
- Climate change
- Adaptive management