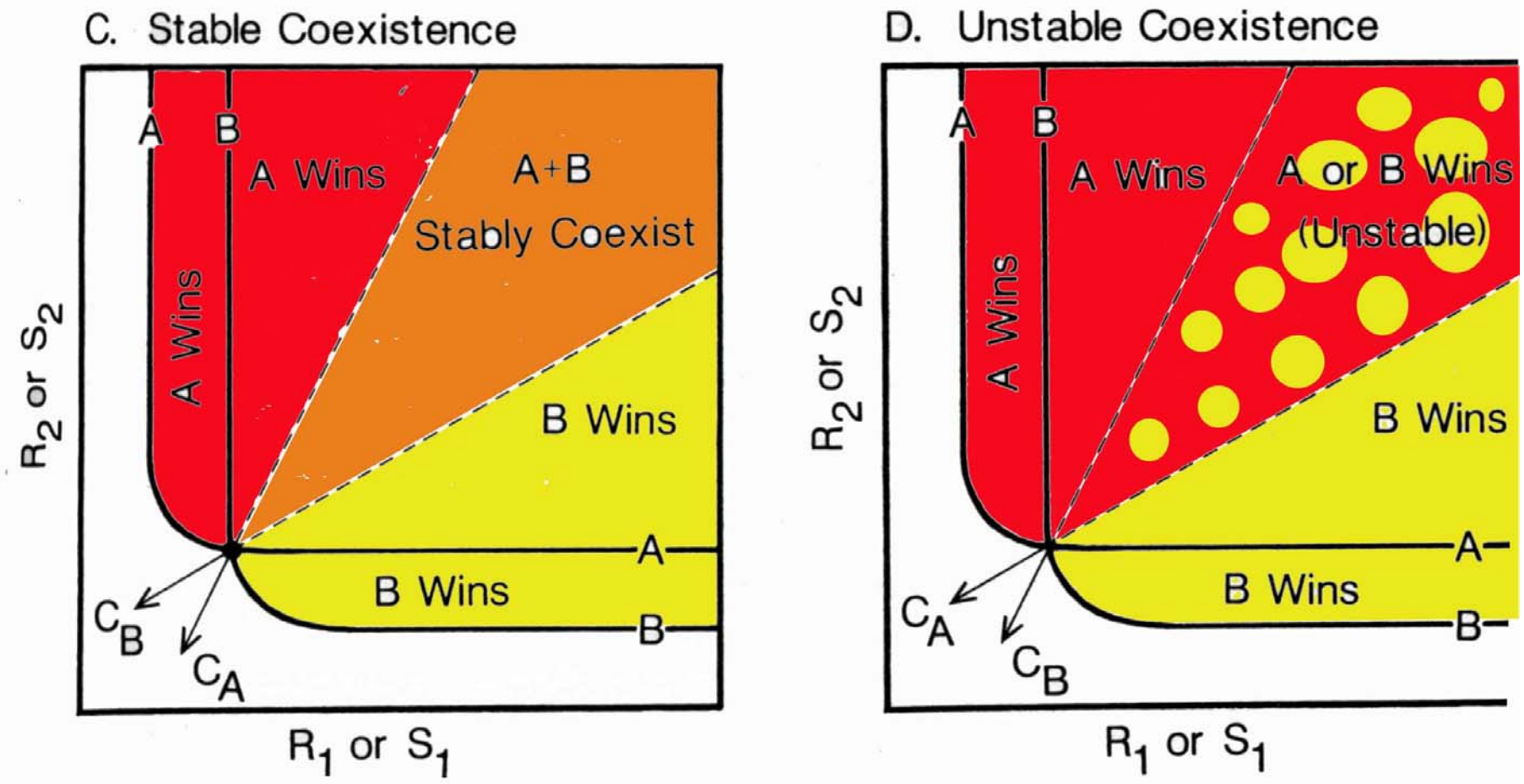
Biodiversity and ecosystem functions

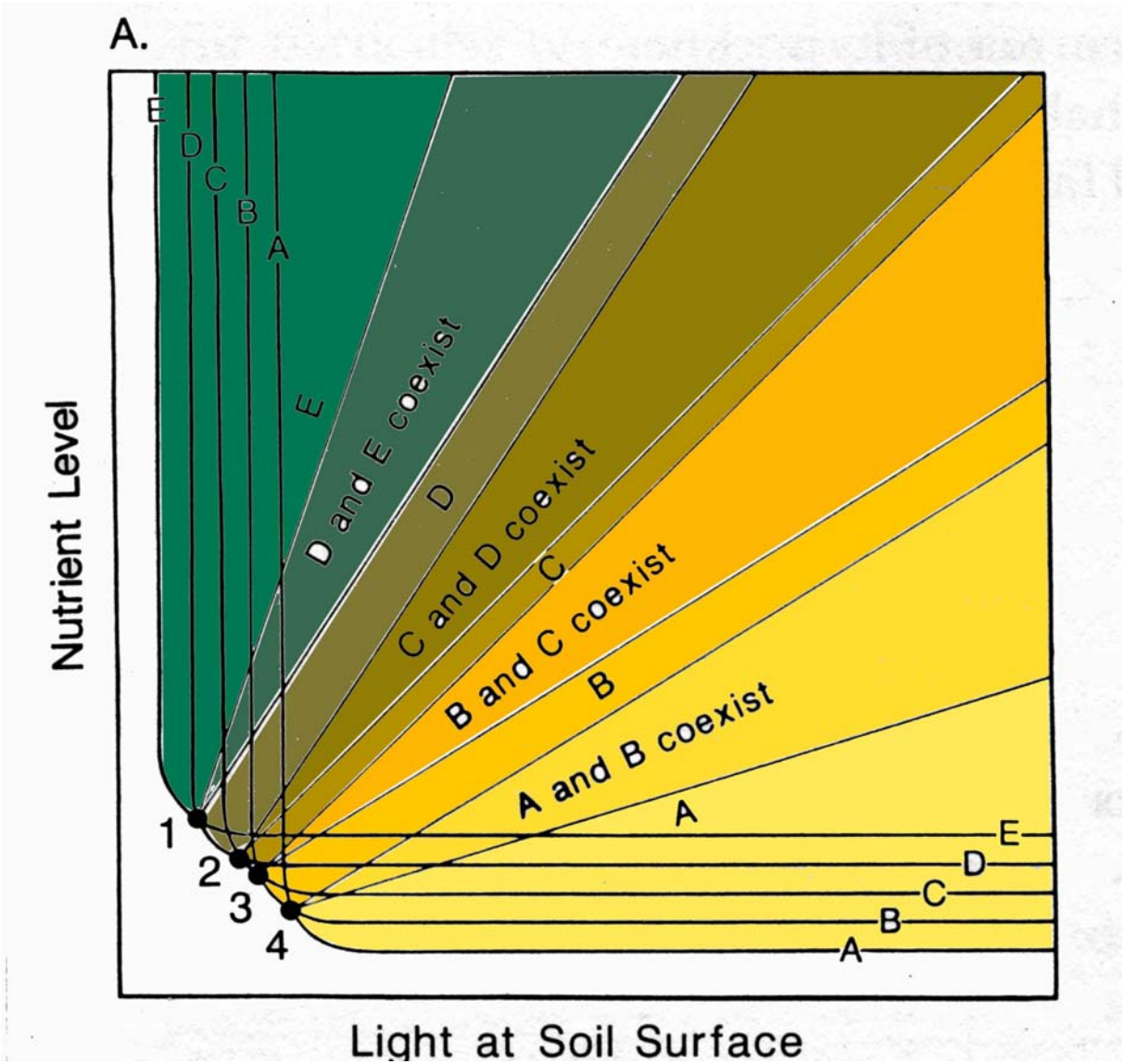
Introduction: biodiversity &

- Complementary resource use
- Ecosystem goods and services
- Ecosystem processes and properties
- Functional diversity
- NPP
- Species estinction and invasion
- Stability

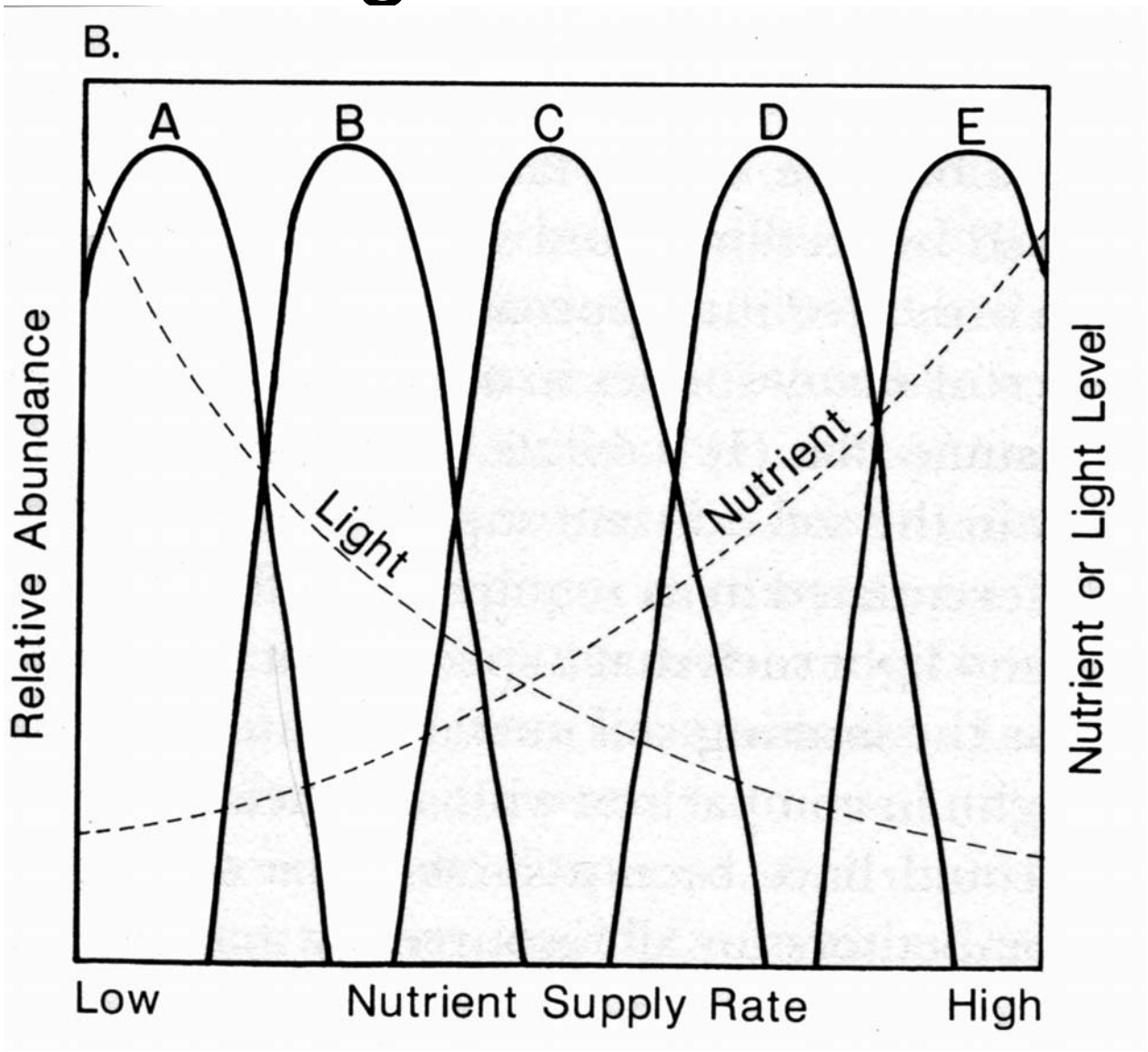
Complementarity



Resource use



Along successions



In the community

- Niche differentiation
- Limiting similarity
- Environmental filters

- Ecosystem level controls
- Community dynamics and assembly

- Functioning and properties → • Goods and Services

sustainability

- Abiotic controls
- Organismal effects
- Dominant species and plant traits
- Keystone species
- Species interaction

Ecosystem functions

- Saturating resp. to increasing richness
- Complementarity
- Sampling or selection effects
- Both
- In non random assemblages sampling effect will be effective?
- Communities are non-r. assemblages?

Increased functions

- Intercropping, agroforestry
- Few species are important for ecos. functions
- The faster growers are always successful?

Storage allocation, interference competition

Reverse sampling effect.

Experimental data

- Saturating at 5-10 species
- Importance of species or functional diversity
- Importance of community assembly (which kind of sp. or funct. types)
- Differences in functional traits and response traits (life history)

How do traits for dominance overlap with functional effect traits?

Complementarity and facilitation

- Timing
- Spatial distribution
- Type of resource demand

Resources / diversity

- Overyeld with legumes or intercropping
- Reverse: lowering diversity with fertilization

Richness / invasibility

- Within sites
- Cross-sites

Sustainability / stability

- redundancy in functional traits and diversity in response traits.
- Which processes are at risk (how many species carry out it?)

Productivity effects

- Evidence for unimodal response to res. availability, stress, productivity, disturbance
- No clear correlation biomass-biodiversity across a wide range of tree dominated formations

Where complementarity is likely to occurr?

- In the rising part of the productivity curve

e.g. in the interaction between nitrogen-fixers and other species

Drivers of community change and patterns of species loss

Predictor variables:

life history characteristics

unpredictable results, validity of random assembly exp.

functional traits

predictable shift in ecos. functions