

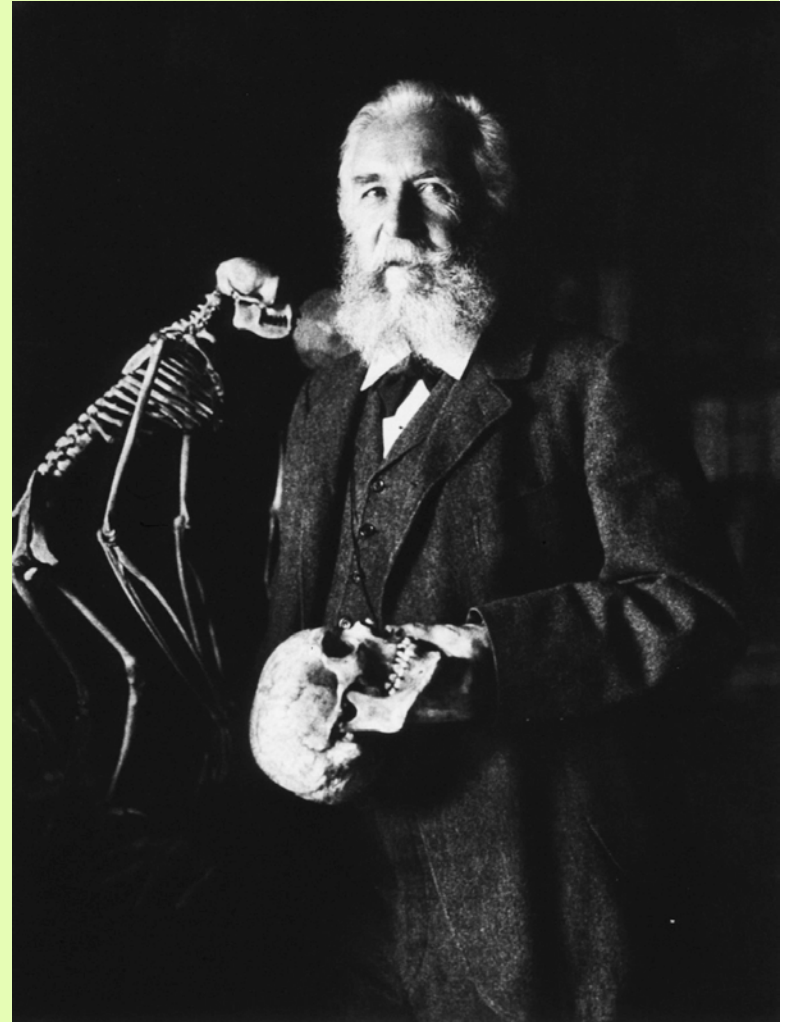
The Fundamentals of Ecology

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A (short) history of definitions – Ernst Haeckel, 1866

- By ecology, we mean the whole science of the relations of the organism to the environment including, in the broad sense, all the "conditions of existence."



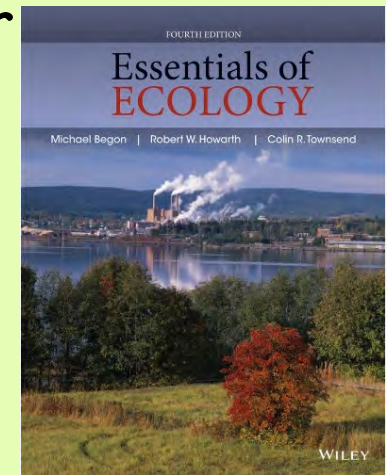
Charles Elton, 1927

- Scientific natural history.
- The sociology and economics of animals.
- Ecology is a branch of zoology which is perhaps more able to offer immediate practical help to mankind than any of the others...



The components of a modern definition

- *The scientific study of the distribution and abundance of organisms, the interactions that determine that distribution and abundance, and the relationships between organisms and the transformation and flux of energy and matter*
- Interactions with the environment
- Interactions with other organisms
- The distribution and abundance of organisms (populations and communities of species)
- Community outputs



The components of a modern definition

- Interactions with the environment



The components of a modern definition - Interactions with other organisms

- **Competition** – within and between species, and the surprising (perhaps) differences of emphasis in the two cases
- **Predation (Consumption)** – and the interesting (and instructive?) range of types of predation:
 - **True predation**
 - **Grazing**
 - **Parasitism**
- **Mutualism** – and the interesting (and instructive?) shift in emphasis from this being seen as cosy reciprocated positivity to mutual exploitation that persists because both partners are net beneficiaries

The components of a modern definition - Interactions with other organisms

- **Competition** – within and between species, and the surprising (perhaps) differences of emphasis in the two cases

- **Predation** – and the interesting (and instructive?) range of types of prey



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- **Mutualism** – a shift in emphasis from mutualism to mutualism and net benefit



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The components of a modern definition - Interactions with other organisms

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- Predation (Consumption) – and the interesting (and instructive?) range of types of predation:
 - True predation
 - Grazing
 - Parasitism



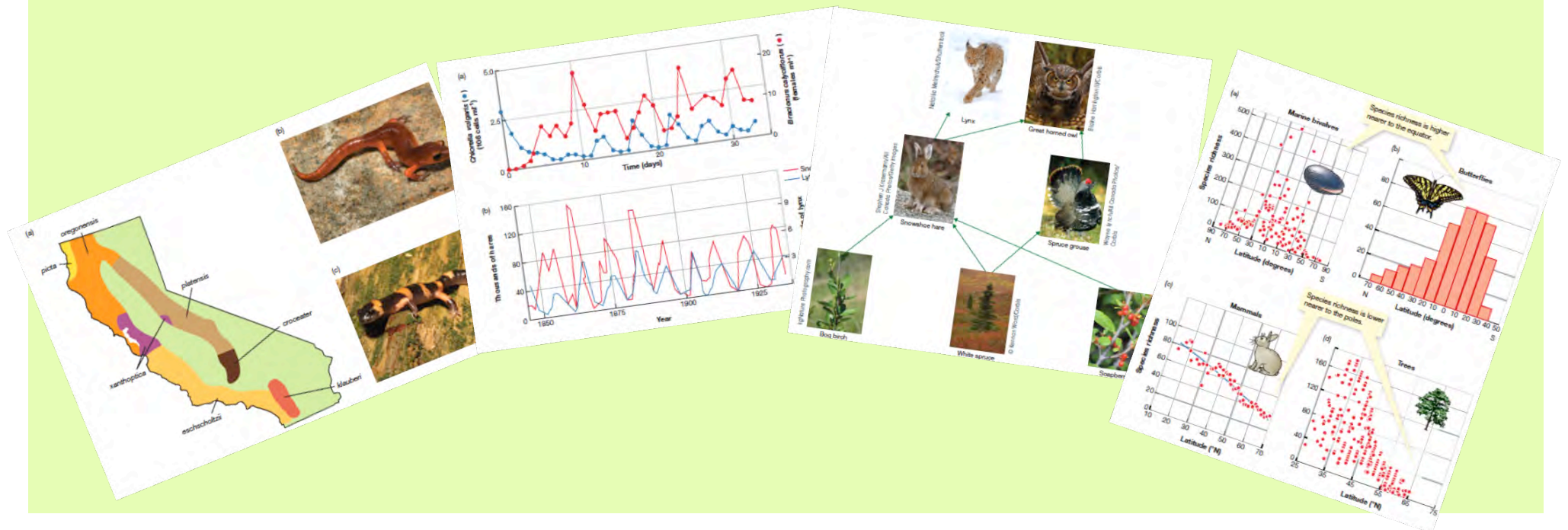
The components of a modern definition - Interactions with other organisms

- Competition – and the surprising (perhaps) different cases
- Predation – an (perhaps) range of types of predators
- Trophic interactions
- Grazing
- Parasitism
- Mutualism – and the interesting (and instructive?) shift in emphasis from this being seen as cosy reciprocated positivity to mutual exploitation that persists because both partners are net beneficiaries



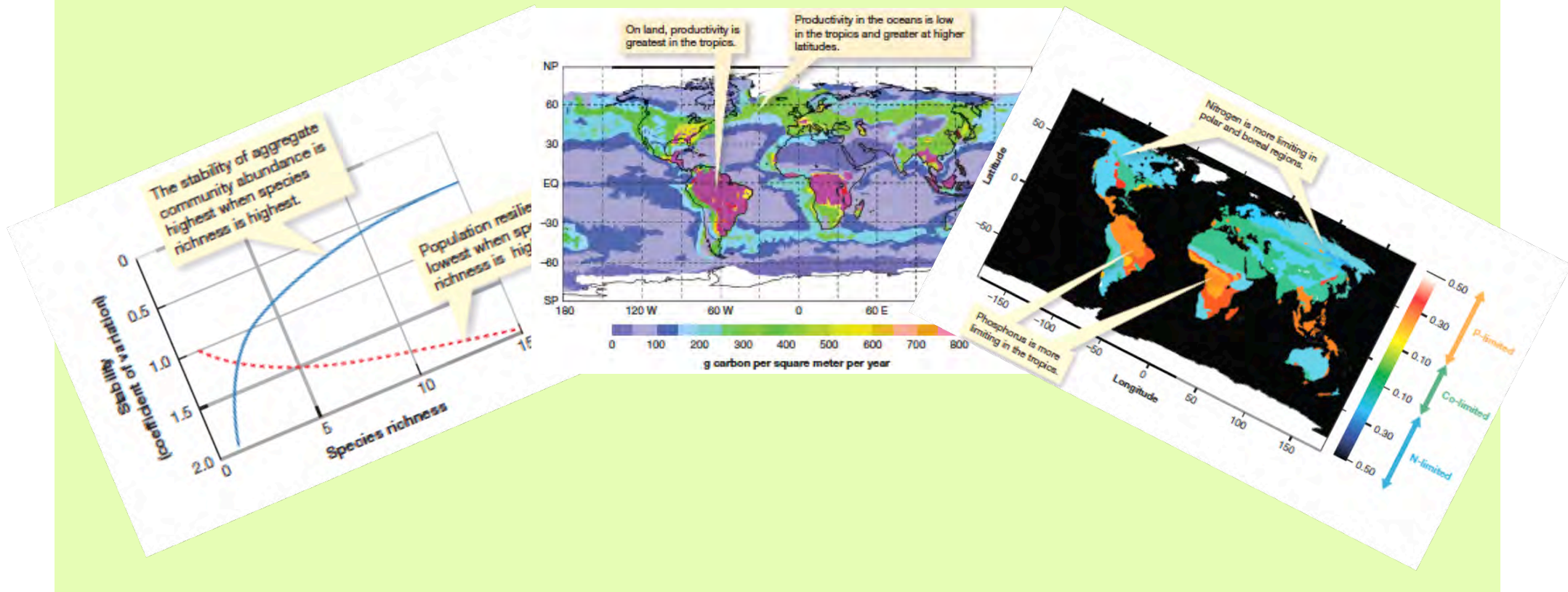
The components of a modern definition

- The distribution and abundance of organisms (populations and communities of species)

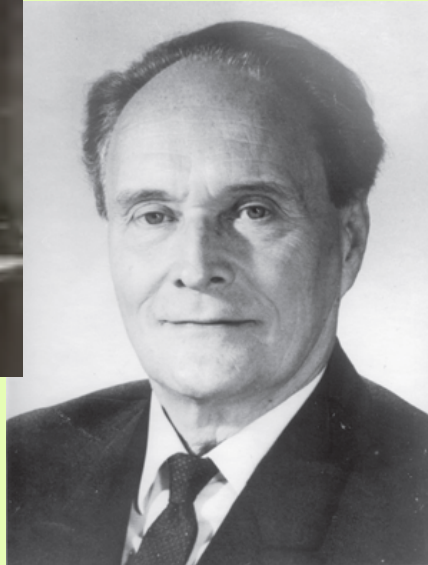


The components of a modern definition

- Community outputs



Observational, experimental, theoretical



Fundamental and applied science

- Historically, a mis-match between academic reality and popular perception.
- Increasingly, that divide has become untenable.



“Nothing in Ecology makes sense, except in the light of Evolution” (Dobzhansky)

