Discussant Natural Capital in Agriculture: What does it mean and how can it be used?

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Outline

1) Natural Capital Accounts - Sustainability
2) Natural Capital Accounts – Environmental Indicator Framework
3) Natural Capital and Institutions

Natural Capital Accounts - Sustainability

- Sustainability is focused on maintaining the capacity of future generations to meet their needs.

- This capacity is represented by the set of capital assets, including:
  - a) Produced capital
  - b) Human capital
  - c) Social capital
  - d) Natural capital

Sustainability Criteria

Weak Sustainability – aggregate stock of capital remains constant over time and capital stocks are substitutable.

- Not a problem of natural capital being depleted but can future generations be compensated for the current loss with substitute capital
- The Hartwick rule for investment in capital (produced capital, human capital, natural capital)
- Substitute capital stocks – conservation offsets, other capital types, area, function, ecosystem services?
- Non-substitutable natural capital

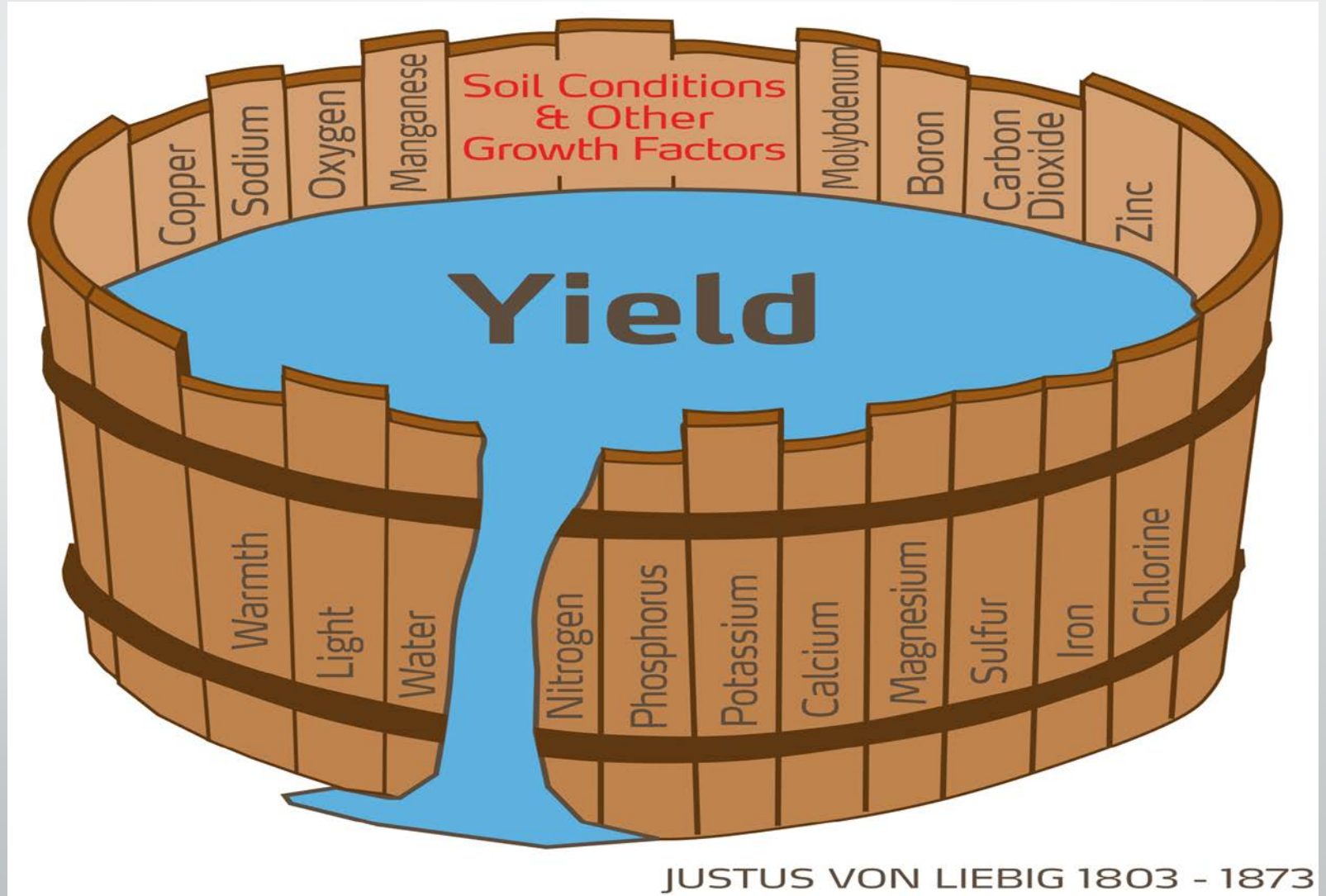
Sustainability Criteria

Strong Sustainability – individual capital stocks are conserved with natural capital stock categories considered non-substitutable.

- Critical natural capital – threshold levels of natural capital
- Requires science to quantify threshold levels for natural capital stocks (ecosystem service) – at what scale (watershed? ecoregion?)

- Are measuring and recording capital accounts enough to evaluate if a system is on a sustainable path?
- Need to incorporate the science of how Natural Capital stocks translate into ecosystem goods and services
- Do the capital accounts represent a combination of ecosystem goods and services that can maintain future productivity
- Identify those capital types (and therefore ecosystem services) that need to be prioritized in investment decisions – natural capital deficits.

<u>Liebig's law of the minimum</u> – increasing supply of plentiful nutrients does not increase plant growth; only by increasing the supply of the limiting nutrient (most scarce in relation to need) was growth improved

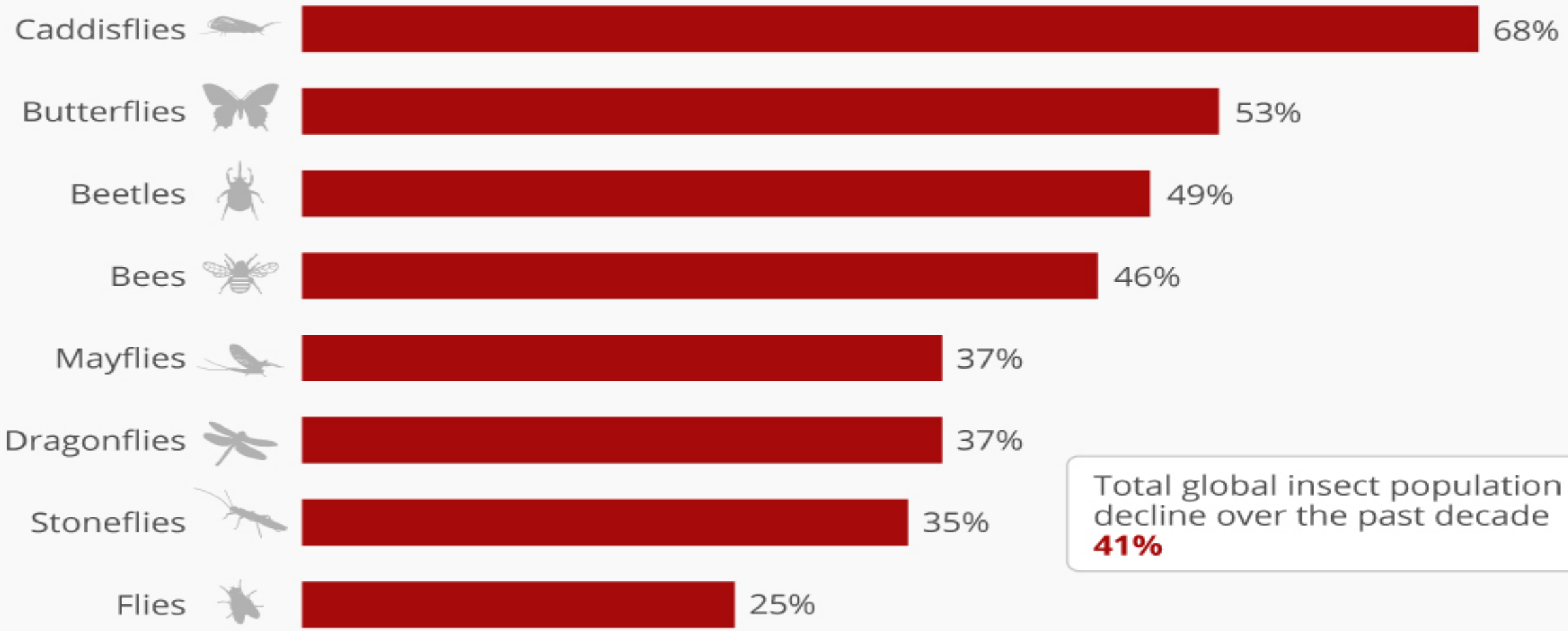


Natural Capital Accounts – Environmental Indicator Framework

- Pressure : State : Response - environmental indicator framework.
- Capital accounts - water resources, soil resources including carbon, nutrients - represent state indicators.
- Is this enough to inform policy development?

Massive Insect Decline Threatens Collapse Of Nature

Percentage decline in selected global insect populations over the past decade



Source: Sánchez-Bayo & Wyckhuys, Biological Conservation, 2019

- What is the appropriate scale to track the natural capital accounts to reflect the capacity of the landscape to provide the necessary ecosystem services?

- Based on these natural capital accounts in agricultural landscapes can a sustainable yield be estimated – requires a mapping of assets to services.

Natural Capital Accounts - Institutions

- Clarify value of benefits (costs) from changes in natural capital stocks/ecosystem services that are captured by the landowner and the value of the benefits (costs) that are external.

- Help to direct policy measures and incentives.

Thank You