

# Framing of values in relation to ecosystem condition

Heather Keith

Griffith Climate Change Response  
Program, Griffith University

Fenner School of Environment and  
Society, Australian National University



# Condition for whom or what?

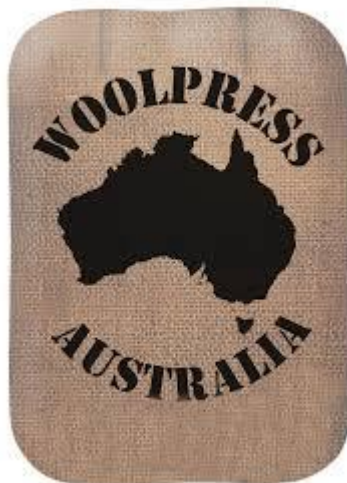


Ecosystem services



- Carbon storage
- Carbon sequestration
- Maintaining nutrient cycling
- Soil protection, erosion control
- Maintaining soil fertility
- Water infiltration
- Maintaining groundwater
- Flood mitigation
- Control of pests and diseases
- Pollination
- Decomposition processes
- Habitat

Productivity



➤ Input to the economy

# What is ecosystem condition?

**Ecosystem condition:** *“the quality of an ecosystem in terms of its biotic and abiotic characteristics, such as water, soil, carbon, vegetation and biodiversity, which may reflect multiple values.”*

Ecosystem assets are described by:

- **ecosystem condition** as a quality descriptor
- **ecosystem extent** as a quantity descriptor

Ecosystem condition establishes the link between:

- **ecosystem assets**, their quantity or extent, and changes in assets over time, and
- **ecosystem services**, that is, the stocks and flows of benefits derived from the assets.

## **Aim of recommendations:**

**Approach:** inclusive and flexible description of ecosystem condition accounts to support a range of ecosystem types and potential uses and users.

**Implementation:** biophysical metrics that may / or may not be converted to ecosystem services or monetary values, based on the series of characteristics, variables, indicators to aggregated indices.

## **An inclusive approach:**

- encompasses the perspectives of different users
- allows for different outputs
- application for different purposes

# Why are multiple values important in ecosystem condition?

Differing perspectives about the purpose of assessing ecosystem condition in terms of quantifying values to assign importance to different characteristics.

The ecological concept of ecosystem condition encompasses both ecosystem conservation and the sustainable use of ecosystem services by humans.

The purpose of ecosystem condition accounts influence:

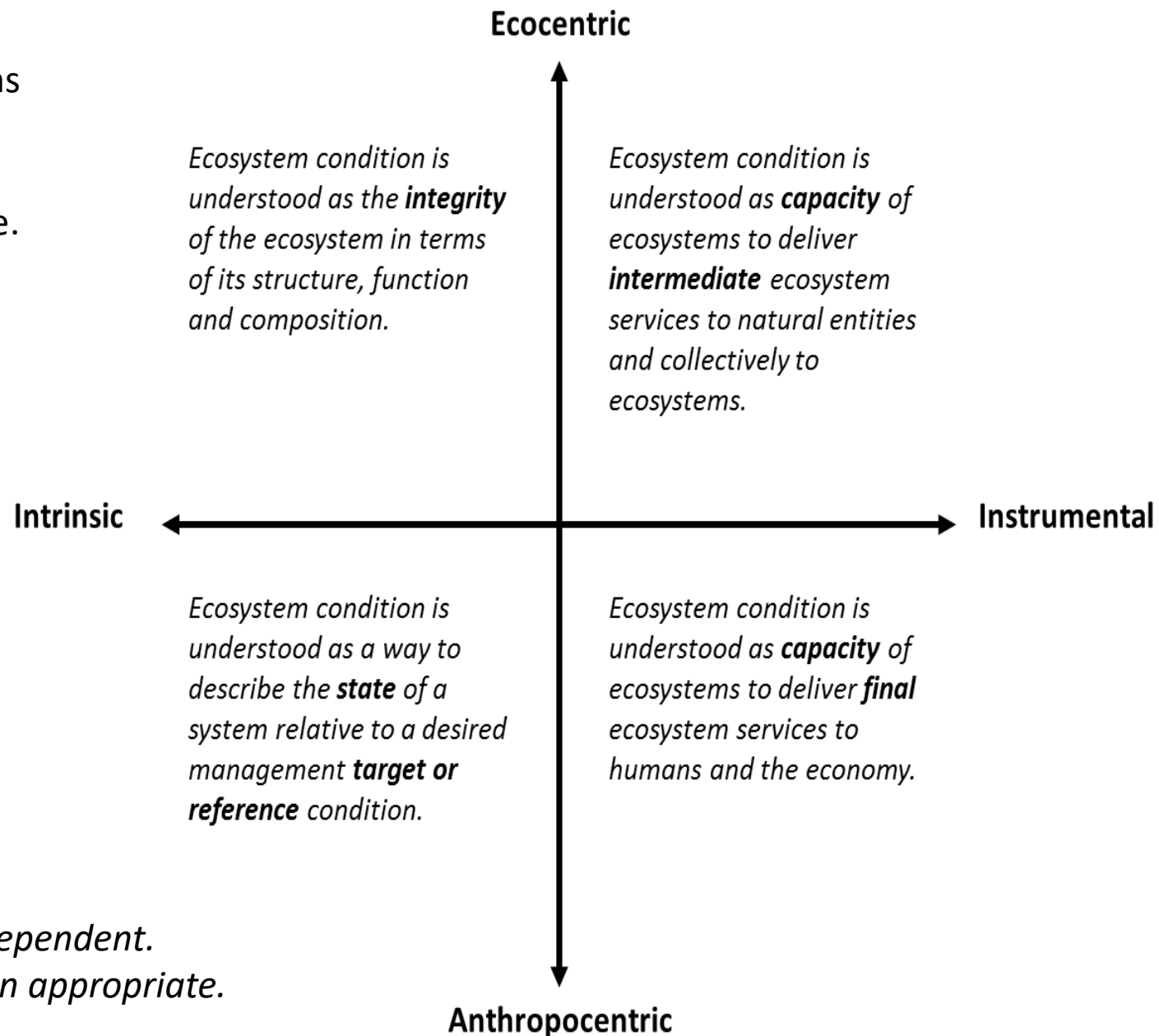
- selection of methods for implementation
- selection of characteristics that are relevant and their associated indicators
- use of reference levels and forms of aggregation
- interpretation and application of the results

Types of purposes of ecosystem condition accounts are described within a values framework represented by spectra in two dimensions of values and worldviews.

- different types of factors determine where a purpose lies within this space
- different values can be defined in terms of specific purposes
- worldviews are perspectives about preferences for a particular state of the world



# Multi-purpose approach to assessing ecosystem condition

1. **Intrinsic values** where ecosystem condition is understood as the integrity of the ecosystem in terms of its structure, function and composition, and the intactness/degradation of the ecosystem in terms of ecological 'distance' from an initial or reference state.
2. **Instrumental values** where ecosystem condition is understood as the capacity to supply specific ecosystem services, with both use and non-use values, and as such has a more utilitarian approach.
3. **Ecocentric worldview** – interpretation of ecosystem goods and services in terms of all living things in nature.
4. **Anthropocentric worldview** – interpretation of ecosystem goods and services in terms of human values.



*Values and worldviews are not necessarily linear or independent.  
The framework can be collapsed to one dimension when appropriate.*

# Examples of different purposes and values

Ecosystem asset	Indicator	Value	Purpose	Interpretation
<b>Native grassland</b> 	Wild bee community (richness, composition, abundance)	Intrinsic/ ecocentric	Ecosystem biodiversity and functioning	conservation
		Instrumental / ecocentric	Intermediate ecosystem service of pollination of wild flowers	habitat
		Instrumental / anthropocentric	Final ecosystem service of pollination of crops	production
<b>Native forests</b> 	Occurrence of large old trees	Intrinsic/ ecocentric	Ecosystem functioning	conservation
	Carbon storage	Intrinsic/ anthropocentric	Regulating ecosystem service	climate change mitigation
	Species richness	Instrumental / ecocentric	Intermediate ecosystem service	habitat
	Food sources, medicines, firewood, spiritual	Instrumental / anthropocentric	Provision of goods and services	production cultural

# Feedback and opinions

## Majority supportive

- For a broad framing for the description of ecosystem condition
- Recognition of the benefits for engaging with policy makers and other users
- Allows for a range of stakeholders, including conservation management
- Makes explicit that there are different purposes and multiple values that are needed in decision-making

## Continuing issues

### 1. Conceptual issues

- Distinction in the role of objective data collection vs purpose-driven reporting
- What is the appropriate distinction for national accounting and the role of national statistics offices?
- Risks that selection and interpretation of indicators are overly influenced by the purpose, non-neutrality
- Should 'use' determine 'condition', or 'condition' determine 'use'?
- Ecosystem condition should be primarily based on objective biophysical measures of the ecosystem
- Indicators should be value free (*proposal that variables are value free, but indicators are related to a reference level*)
- Need for coherent statistical outputs

### 2. Practical issues

- Clarification about types of accounts that have different values focus
- Should the range in values be considered as one- or two- dimensional?
- The measurement goal of ecosystem condition accounts can seem too broad
- The spectrum of values could be made more operational by including the consequences for ecosystem management policies
- A values framework creates too complex a hierarchy of frameworks within ecosystem accounting
- Additional guidance is needed about how to apply statistics to the framework that are replicable and comparable
- Demonstration of the links to physical flow accounts and other ecosystem accounts