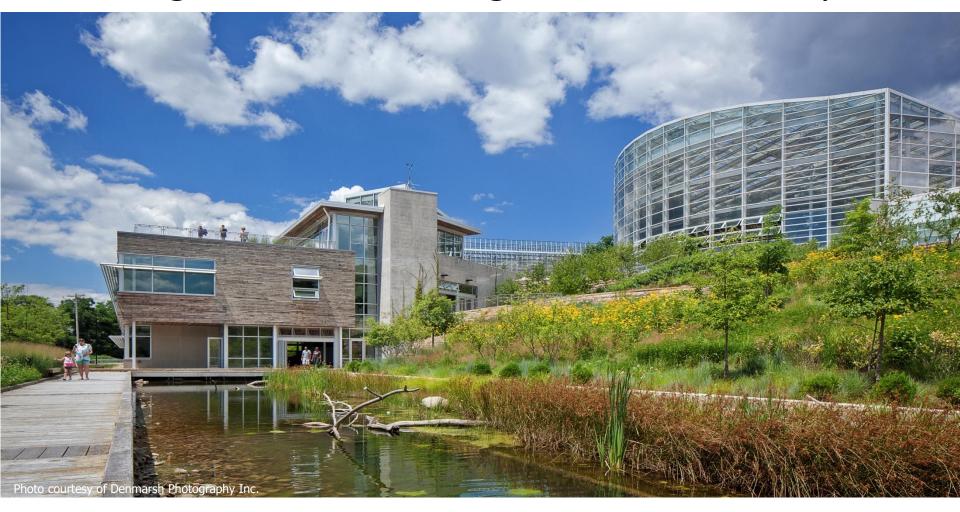
# Old Ways New Ways, Regenerative Thinking in the 21<sup>st</sup> Century



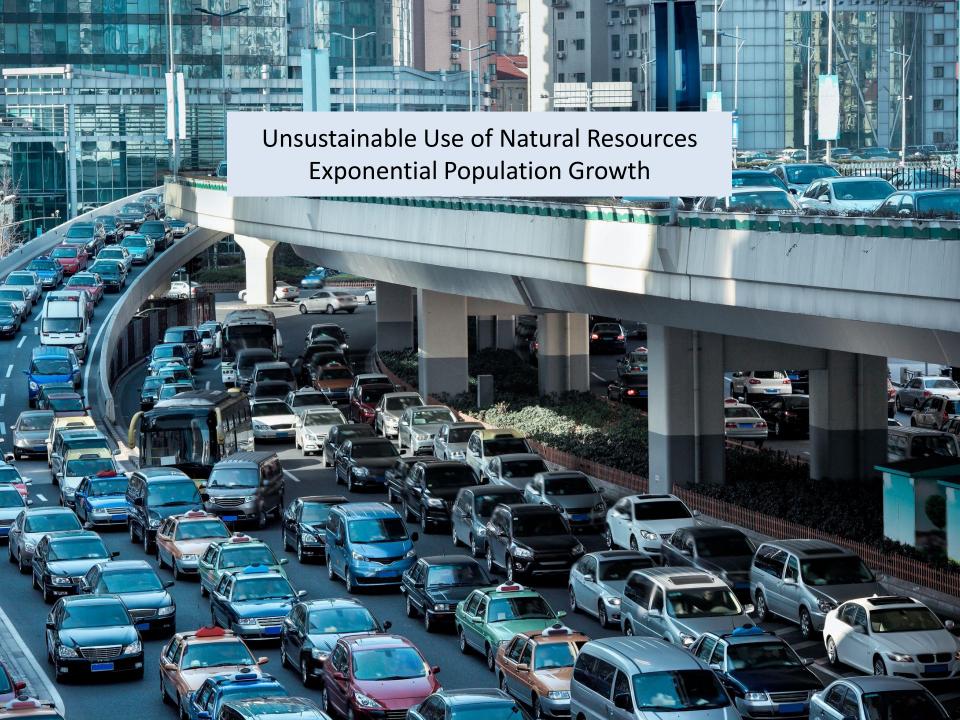
Richard Piacentini, Phipps Conservatory and Botanical Gardens Christopher Dunn, Cornell Botanic Gardens

## **Session Goals**

- Take an in depth look at regenerative thinking, explore the 7 first principles of regeneration and demonstrate how it can be translated to a public garden.
- Explore parallel practices and thought as expressed by local and indigenous cultures.
- Recognize, that we need to engage with, and learn from, local communities and indigenous cultures to better understand how we should interact with the natural world.























# **Equity and Social Justice**



Stockholm Resilience Centre



October 2018



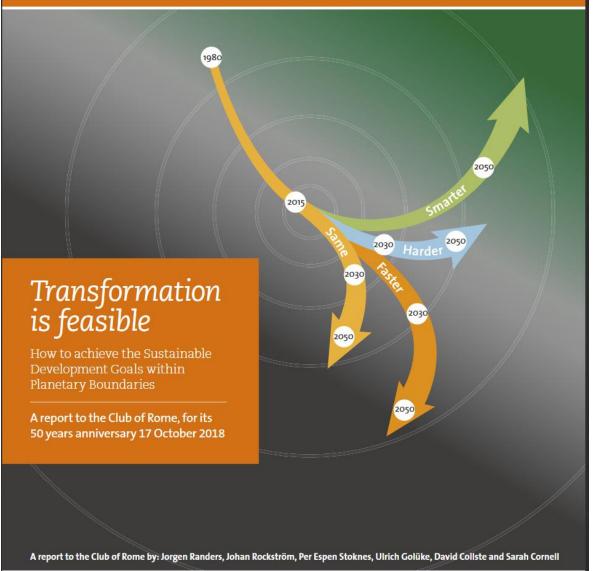




Figure 1.3 The UN 17 Sustainable Development Goals (SDGs), implemented by all the world's countries in 2016.

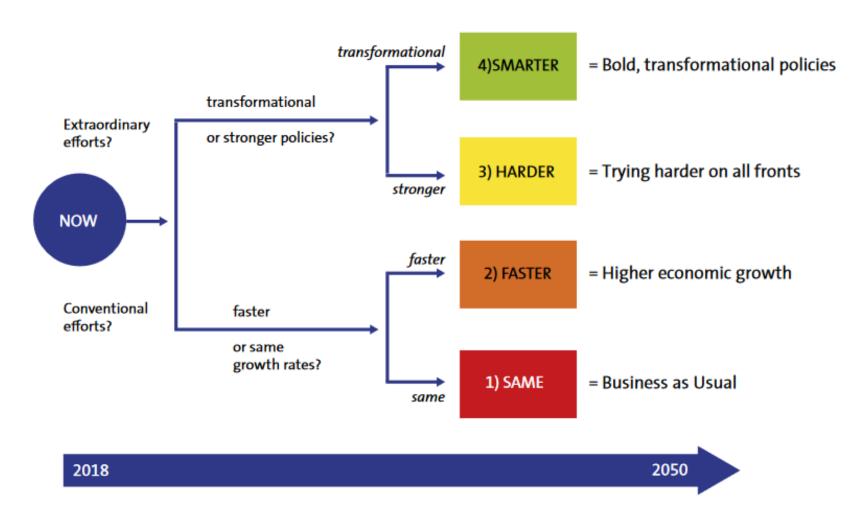


Figure 2.1 The "scenario logic" that determines the main characteristics of each scenario.

Scenario—> Main Policy Levers:	Same Business as usual	Faster Higher growth	Harder Stronger efforts – on all fronts	Smarter Extraordinary transformation
Growth	Average 2–3% GDP/yr "As is": (higher in poor countries, slower in rich countries)	3-4% GDP/yr	2–3% GDP/yr (= Same)	2–3% GDP/yr (differentiated: higher growth in poor countries)
Poverty, unemployment & inequality	"As is": Maintain current aid and unemployment benefit levels	= Same	+30% effort in fighting poverty, unemployment, inequality	active redistribution until 10% richest control <40% income
Energy	"As is" (current trends continue)	= Same	+30% effort in clean energy access, clean cities	rapid growth rates in renewables (wind & solar) and electrification
Food	"As is" (historic trends continue)	= Same	+30% effort in no hunger, safe water,	rapid shift to sustainable food chain (+1%/yr higher productivity)
Education & gender	"As is" (historic trends continue)	= Same	+30% effort in gender equality, education of women, family planning	investment in education to all, gender equality, health, family planning, (financed by redistribution)

Table 2.1 The main characteristics of each scenarios policy-portfolio.

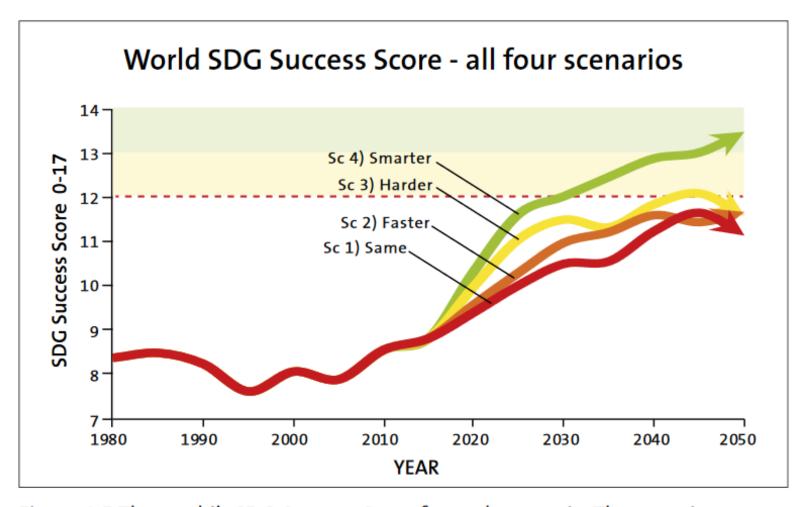
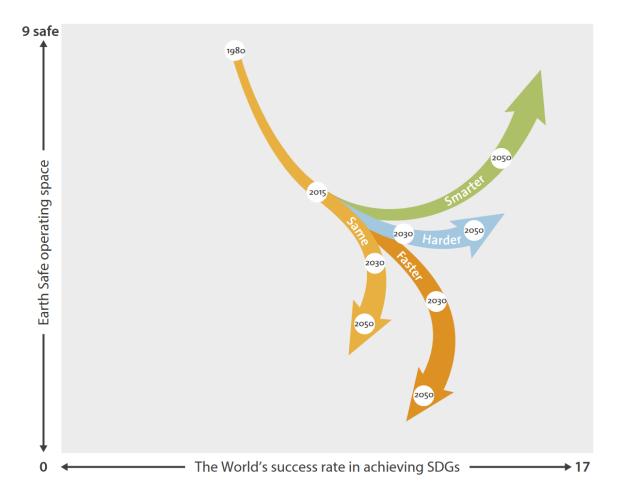


Figure 1.5 The world's SDG Success Score for each scenario. The score is calculated as the sum of the regional success indices, weighted by population, for each scenario.

## 3 Out of 4 Simulations Put Us Out of the Safe Zone for:

# Global Warming Pollution Loss of Biodiversity



# Transformation

## Current Climate on Science and the Environment

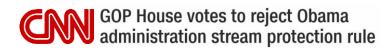


Trump budget seeks huge cuts to science and medical research, disease prevention

The Washington Post

E.P.A. to Eliminate Office That Advises Agency Chief on Science

The New York Times



Trump Will Withdraw U.S. From Paris Climate Agreement

The New York Times

Trump administration lifts ban on pesticides linked to declining bee numbers

The Guardian

The EPA will no longer require oil and gas companies to report their methane emissions

BUSINESS

INSIDER

CDC abruptly cancels long-planned conference on climate change and health

The Washington Post

Trump Administration Restricts News from Federal Scientists at USDA, EPA

> SCIENTIFIC AMERICAN











# Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

# Nature's Dangerous Decline 'Unprecedented' Species Extinction Rates 'Accelerating'

Current global response insufficient; 'Transformative changes' needed to restore and protect nature; Opposition from vested interests can be overcome for public good

Most comprehensive assessment of its kind; 1,000,000 species threatened with extinction



# Shift Thinking – Outcomes to Values

Should We Do Something – To How Do We Get It Done







Annie O'Neill

Paul g. Wiegman

# Four Different Paradigms for Interacting with the World

Extractive	Less Bad	Do Good	Regenerative
About Me	About Us Inter-connectedness	About Us Reciprocity	About Us System
Fragments	Fragments Stabilize them	Fragments Improve them	Whole

## Two Models of Nature

### Conquer

- Bacon, Newton, Descartes
- Humans separate from and hold stewardship over nature

#### Solution

- Technology
- More enlightened oversight
   as well as technological

### **Ecological**

- Reciprocity, interdependence, sacredness of all life
- Indigenous Cultures

#### Solution

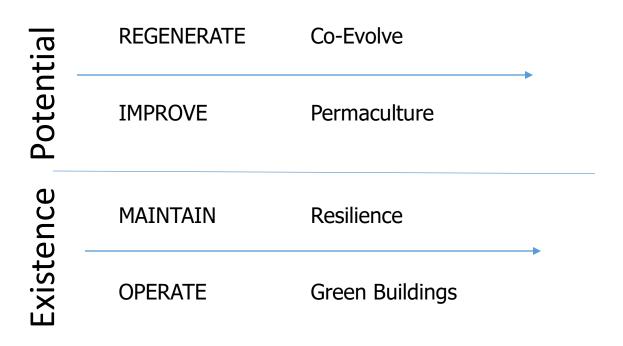
- Psychological and Spiritual

## The Evolution of Sustainability

- Equilibrium finding the right mix to keep things moving smoothly –
   The Bruntland Report
- Resilience Humans and Ecosystems interdependent adapt and regroup when equilibrium is disrupted
- Co-evolution Humans contribute to the abundance of life we are not outsiders to nature – we have a value adding role to play

# Regenerative Thinking

### Levels of Work



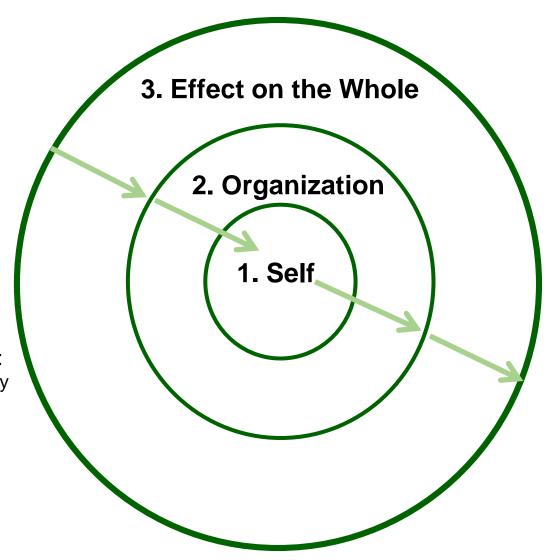
# System Transformation: Three Lines of Work

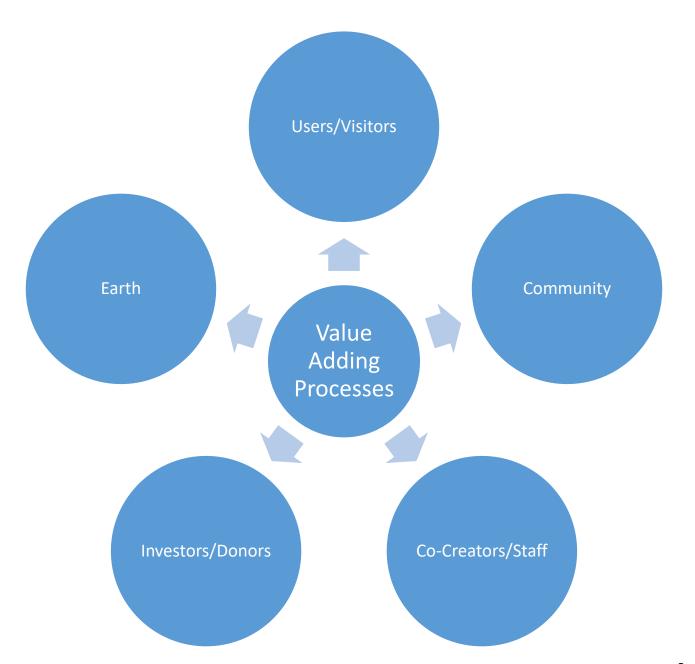
1. Working on ME:
Entity leading a transformation (change process)

2. Working on Team & Community:

Need to develop my/our capability
to work effectively together

Working on System:
 Transformation of a system
 (greater whole) which we commit to evolving





Source: Carol Sanford

# First Principles of Regeneration What Does it Look Like in a Public Garden?

Wholes – focusing on our effect on the whole

Essence – exhibiting singularity

Nestedness – understanding our role embedded in larger systems

Reciprocity – operating with living dynamic processes

Potential – initiating with potential

Nodal – seeking interventions at the point of highest systemic return

Development – increasing capacity of wholes to be vital & viable

## Wholes

- Goal to understand whole living systems, Nothing works in isolation
- Holistic rather than reductionist
- Organization, staff, visitors and ecosystem all interconnected
- Human and ecological health are interconnected
- What is our role as a member of nature
- Certifications are instruments for deeper understanding and development



## Essence

- Our institution is unique and non-displaceable
- Linking human and ecological health throughout all of our activities is what makes Phipps unique

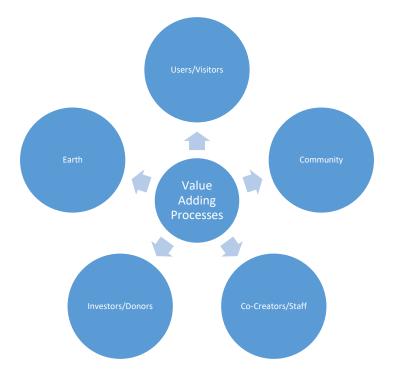








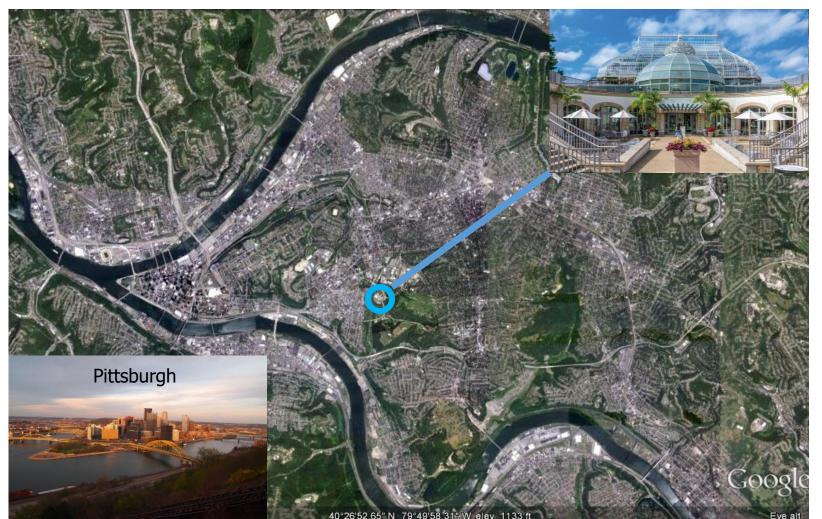
g. Wiegma



- Manage our lawns organically, practice IPM
- 100% of Electricity is renewable. All heating carbon is offset
- 42% reduction in water use
- Zero Waste Platinum certified
- Promote fair trade in gift shop
- Divested from fossil fuel investments
- We accept no sponsorships from fossil fuel, pesticide or junk food companies

## **Nestedness**

- We are embedded within greater and lesser systems each plays a role in the success of the whole and other nested wholes.
- All new buildings are zero energy buildings
- Focus on reciprocal, mutually-beneficial interrelationships



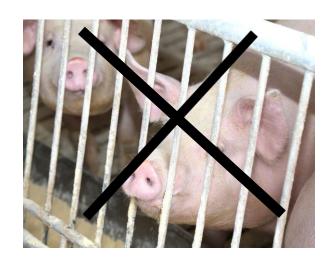


## Reciprocity

- We operate within living, dynamic, nested systems
- We make reciprocal mutually beneficial interactions with larger and lesser systems in which we are nested
- Feature local, organic, compost consumer waste
- No: factory farms, junk food, soda, plastic disposables, bottle water







Adam Milliron

## **Potential**



## Nodal

- Like acupuncture we seek interventions at the point of highest systemic return
- Homegrown, Lets Move Pittsburgh, Champion Schools
- Botany in Action, Biophilia Network, Biophilic Cities
- Studio Phipps, Sustainable Landcare

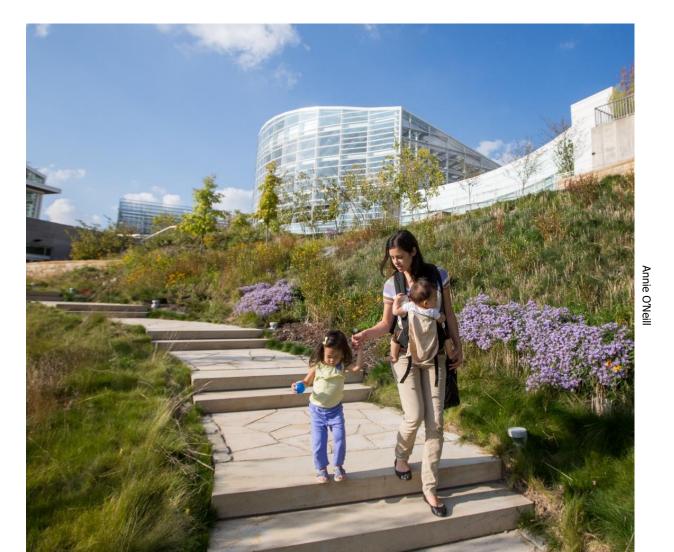


## Development

We seek to grow and develop the capacity in everyone we reach



# When We Focus on Regeneration We Create Places that are Better for People and the Planet

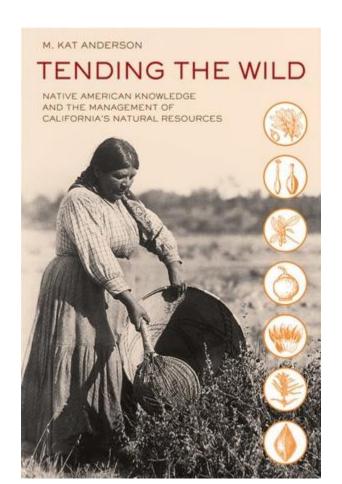


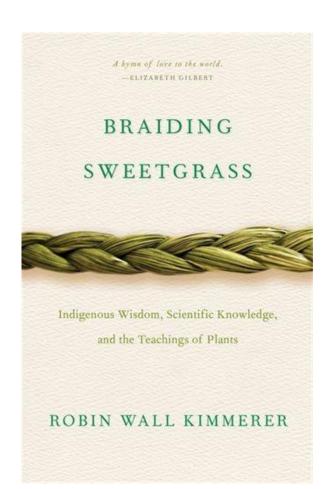
We brought the crisis on us when we forgot we belong to and depend on the infinitely complex web of life



### We Don't Have to Reinvent the Wheel

- Prior to European colonization many indigenous communities interacted with their environments in ways that increased biodiversity and productivity (Value Adding)
  - Kat Anderson "Tending the Wild"





#### Stockholm Resilience Centre

### Report

October 2001











Transformative change is possible, through five strategies that seem to be powerful ways to reach most SDGs within most PBs. The five measures are:

- 1) accelerated renewable energy growth sufficient to halve carbon emissions every decade,
- 2) accelerated productivity in sustainable food chains,
- 3) new development models in the poor countries,
- 4) unprecedented inequality reduction, and
- 5) investment in education for all, gender equality, health, family planning.

The choice is the simplest way...to achieve all SDGs, both social and environmental. Together, they are capable of shifting the global system onto a new path in the decades ahead.

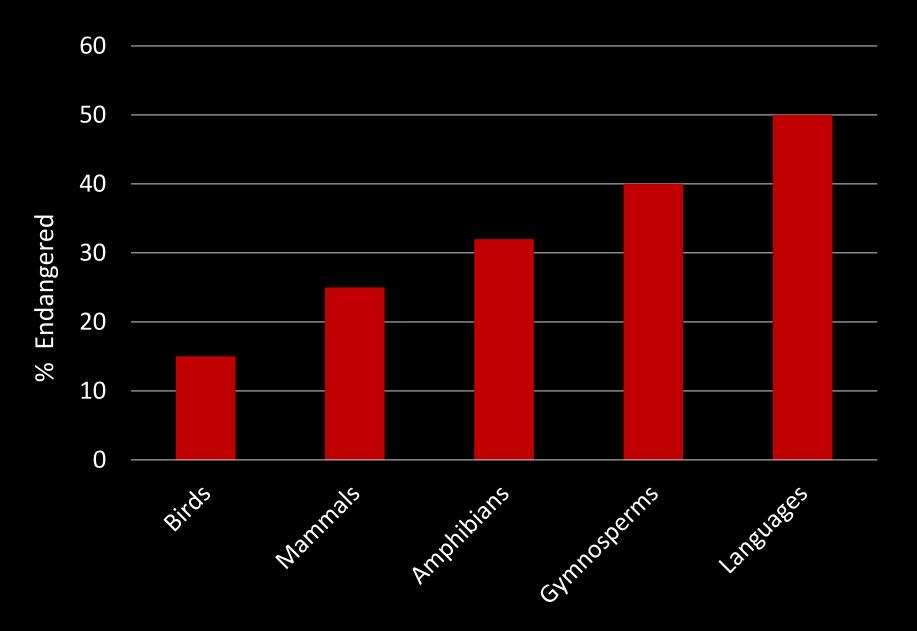




By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected...and fully integrated...in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.



**Target 13:** Indigenous and local knowledge innovations and practices associated with plant resources, maintained or increased, as appropriate, to support customary use, sustainable livelihoods, local food security and health care.

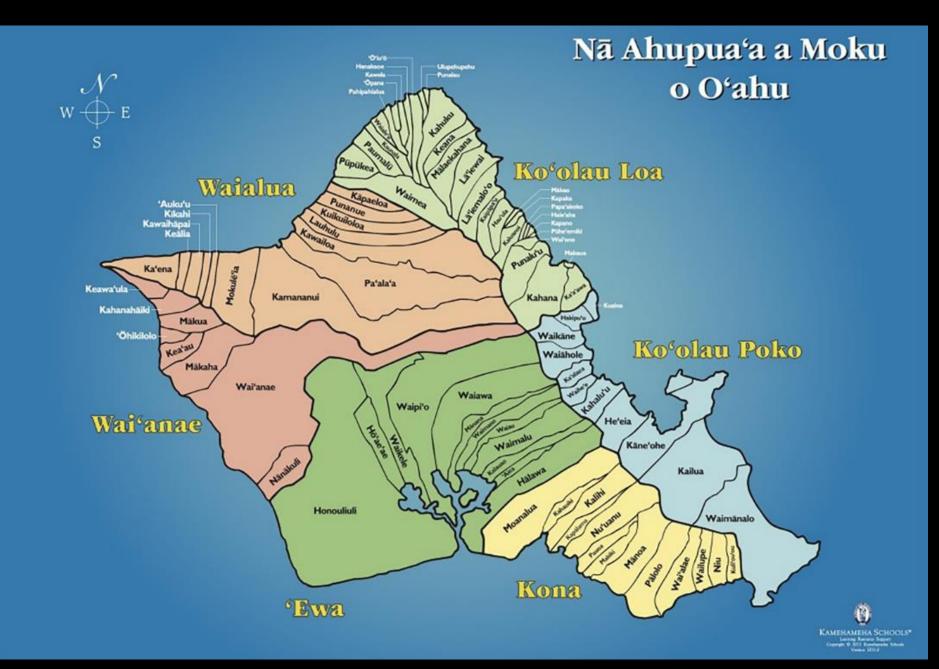


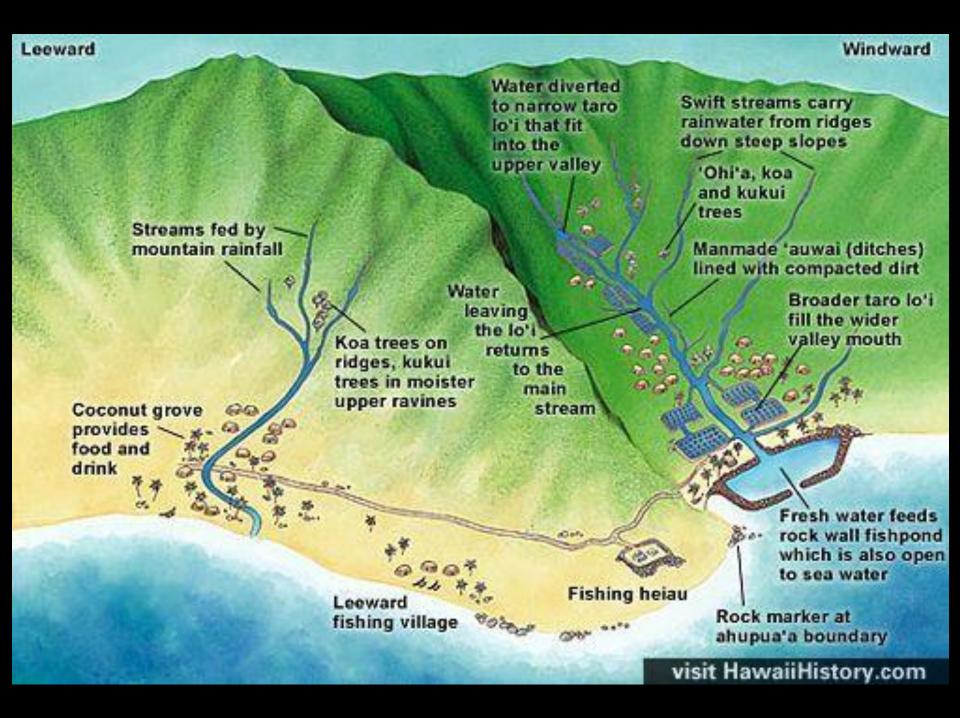


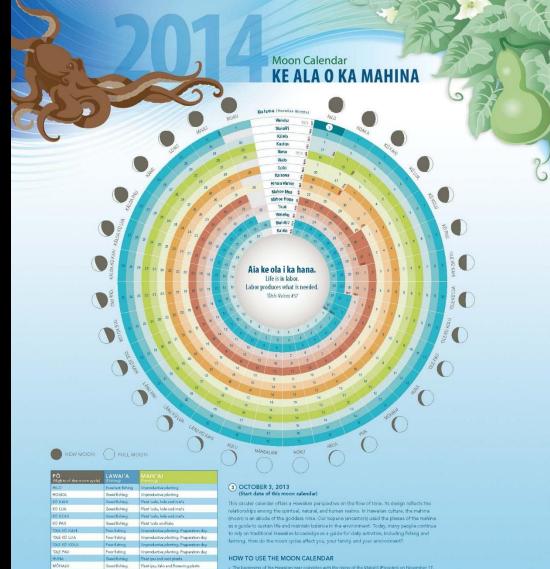




From: Hunt, J. Archeol. Sci. (2007)







#### Hawaiian moon calendar

- The beginning of the Hawaiian year coincides with the rising of the Makali'i (Pleiades) on November 17. This calendar starts on October 3, 2013 with Hillo, the first pô (night) of the moon cycle.

Good fishing Flant Yusla, you and fruit plants
Good fishing Flant Yusla, you and fruit plants

Good fishing Plant nei/a, 'ulu and other trees

Good fishing Plant mai'a, 'ulu and other trees

Poor fishing Unproductive planting. Preparation day

Good fishing Plant mai'a, 'ohe, kö and vined plants Excellent fishing Unproductive planting

> Plant ipu and melons Plant mar's, his and trees

Excellent fishing Excellent planting

No fishing

AKUA

MÄHEALANI

LATAU KO KAHI

LÄ'AU PAU

OLE KO LUA

KÄLOA KÜ KAHI

KĀLOA PAU

- Follow the pô in a clodowise fashion, moving from the outermost ring inward.
- Each ring represents one full moon cycle or malama (traditional Hawaiian month). The 12-malama Hawaiian year start with Welshu and ands with likids. Three extra malama are included in this chart, making this calendar useful through December 19, 2015.
- Western calendar months are represented by different colors, and Western dates are numbered in each box.
- There are two seasons in the Hawaiian year. Iau (dry season) and holoifo (wet season). Kau starts in the malama of Italia and ends in Titula. Holoifo starts in Welehu and ends in Welo.
- For additional educational material related to this moon calendar, please visit www.kamehamehapublishing.org















Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

#### ADVANCE UNEDITED VERSION –

#### 6 May 2019

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## **KEY MESSAGES OF IPBES REPORT (2019)**

- A. Nature and its vital contributions to people are deteriorating globally
- B. Direct and indirect drivers of change have accelerated during the past 50 years
  - B6: Nature managed by indigenous peoples under increasing pressure
- C. Goals for conserving and sustainably using nature by 2030 can only by met through transformative changes
  - C3: Disproportionate impact on indigenous peoples
- D. Nature can be conserved, restored, and used sustainably, while also meeting other global societal goals
  - D3: Promote different knowledge systems
  - D4: Recognize local and indigenous innovations, practices and include in environmental governance
  - D6: To feed humanity, need to incorporate knowledge from various systems including indigenous and local practices

#### Global Sustainability

#### cambridge.org/sus

#### Review

Cite this article: Merçon J, Vetter S, Tengö M, Cocks M, Balvanera P, Rosell JA, Ayala-Orozco B (2019). From local landscapes to international policy: contributions of the biocultural paradigm to global sustainability. Global Sustainability 2, e7, 1–11. https://doi.org/10.1017/sus.2019.4

Received: 22 November 2018

Revised: 16 April 2019 Accepted: 17 April 2019

#### Keywords:

ecology & biodiversity; human behaviour; natural resources (biological and nonbiological); policies; politics and governance; social value

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# From local landscapes to international policy: contributions of the biocultural paradigm to global sustainability

Juliana Merçon<sup>1</sup>, Susanne Vetter<sup>2</sup>, Maria Tengö<sup>3</sup>, Michelle Cocks<sup>4</sup>, Patricia Balvanera<sup>5</sup>, Julieta A. Rosell<sup>6</sup> and Bárbara Ayala-Orozco<sup>5</sup>

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#### Non-technical summary

Nature and culture are intricately linked and the rapid loss of both biological and cultural diversity around the globe has led to increasing concerns about its effects on sustainability. Important efforts to understand biocultural relations and bolster sustainable practices have been made by scientists, local communities, civil society organizations and policy makers. In spite of their efforts, a stronger articulation between sectors and biocultural discourses is needed for a broader transformative impact. Here, we analyse the connections between prominent biocultural discourses and discuss how the biocultural paradigm can contribute to both local and global sustainability.

### **Víctor Manuel Toledo**

Institute for the Study of Ecosystems and Sustainability, UNAM Early champion of biocultural studies

Federal Minister of Environment and Natural Resources (as of May 27, 2019)









A hymn of love to the world.
-ELIZABETH GILBERT

## BRAIDING SWEETGRASS



Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants

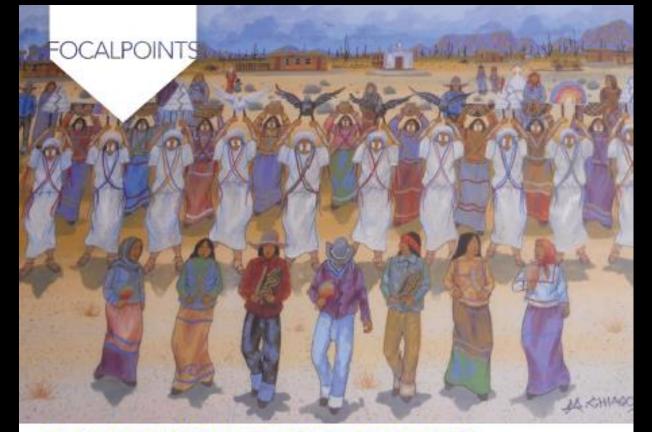
ROBIN WALL KIMMERER

## **Public Garden**

THE JOURNAL OF THE AMERICAN PUBLIC GARDENS ASSOCIATION VOLUME 34, ISSUE 2, 2019



FIRST NATIONS PARTNERSHIPS SENTINELS AGAINST INVASIVE PLANTS THERAPEUTIC GARDEN



## PARTNERING WITH OUR NATIONS' FIRST PEOPLES

Alyce Sadongetand, Marte Long, Victor Hugo "Tonatituh" Ochoa, Sharmon Martin, and David C. Michener

COLLABORATIONS WITH INDIGENOUS PROPLES CAN ENHANCE THE EDUCATIONAL EXPERIENCE AT A BOTANICAL GARDEN BY PROVIDING ALTERNATIVE VIEWPOINTS THROUGH THE LENS OF THEIR LANGUAGE AND WORLDVIEW. THIS INCLUDES NEW APPRECIATION FOR THE ECOLOGY, FLORA, FAUNA, AND THE LANDSCAPE WITHIN A GARDEN. THERE IS A REVOLUTION IN THE FIELD THAT IS TRANSFORMING OUR GARDENS FROM BEING SOLELY PLACES TO SHOWCASE A WIDE VARIETY OF PLANTS FOR EDUCATIONAL, SCIENTIFIC, AND ORNAMENTAL PURPOSES FROM OUR WESTERN POINT OF VIEW, INTO PLACES THAT PROVIDE THE CULTURAL CONTEXTS FOR ENHANCED UNDERSTANDING OF THESE SAME PLANTS FROM THE POINT OF VIEW OF OUR LAND'S ORIGINAL INHABITANTS.

BY INCLUDING THE VOICES OF NORTH AMERICA'S FIRST INHABITANTS IN OUR INTERPRETIVE EFFORTS, WE PROVIDE AN OPPORTUNITY FOR OUR GUESTS TO DISCOVER THE CULTURAL STORIES AND THE TRADITIONAL ECOLOGICAL KNOWLEDGE HELD BY THESE PEOPLES. CONVERSELY, WE CULTIVATE SPACES WHERE INDIGENOUS PEOPLES ARE WELCOME, CELEBRATED, AND RESPECTED.



Ceremonial white pine (Tree of Peace) planting; Cornell Botanic Gardens

## One touch of nature makes the whole world kin

William Shakespeare (Troilus & Cressida)



