

Back to the Land: Why Restoring Earth's Capacity Will Take All of Us

with Brett KenCairn | Episode 222

Show Notes and Links to Learn More

The TGS team puts together these brief references and show notes for the learning and convenience of our listeners. However, most of the points made in episodes hold more nuance than one link can address, and we encourage you to dig deeper into any of these topics and come to your own informed conclusions.

00:00 – [Brett KenCairn](#) – [Center for Regenerative Solutions](#), [City of Boulder Nature-Based Climate Solutions: Cool Boulder](#)

- [Presentation Brett provided for this episode](#)
- [In-video inserts](#)

03:20 – [Brett KenCairn Bioneers talk](#)

03:42 – [UN Convention on Biological Diversity](#)

04:05 – [Brett KenCairn's referenced quote on stabilizing the climate](#)

04:23 – [50% of living system function lost on this planet](#)

05:10 – [Energy systems change](#) & [Carbon accounting](#) vs. [Natural climate solutions framework](#)

05:20 – [Carbon sink capacity of the earth](#), [Natural carbon sinks](#)

05:43 – [Climate as a biologically mediated dynamic](#)

06:15 – [Gaia hypothesis](#) and [James Lovelock](#)

06:30 – [Sentience across life forms including unicellular organisms](#)

07:00 – [World Atlas of Desertification: 75% of terrestrial world deeply degraded](#)

07:10 – [2 billion hectares of abandoned agricultural land \(more info\)](#) vs. [1.5 billion hectares currently used/available](#)

07:30 – [Cedars of Lebanon](#) and the [Fertile Crescent](#) ([Nate's recent Frankly on Lebanon](#))

07:55 – [Global plant biomass reduced 50% since the Holocene began](#)

08:15 – [Planet has one-third less forest than it did](#)

08:25 – [73% of all species in decline](#)

08:32 – [Wild mammal biomass: 95% wild to 95% human/domesticated reversal](#)

08:57 – [Ocean phytoplankton declined 40%](#)

09:00 – [Marine fish biomass down 60–80%](#)

09:23 – [One Earth study: Breaching planetary boundaries: Over half of global land area suffers critical losses in functional biosphere integrity](#)

The Great Simplification

10:00 - ["A Planet at Half Capacity" \(report provided by Brett\)](#), [Diminished potential of conventional lawns \(list of citations provided by Brett\)](#), More info:

- [Global vegetation is operating below its ecological potential](#)
- [Humans now appropriate or alter about a quarter of potential plant growth \(more info\)](#)
- [Land degradation is threatening species](#)

11:05 - [Boulder Parks and Recreation](#)

11:40 - Tree canopy expansion as [climate adaptation](#), [photosynthesis boost](#), [stormwater management](#), [decreasing irrigation need](#)

12:50 - [Biocapacity](#)

12:55 - [40% of net primary productivity diverted to human use](#)

13:45 - Historical abundance: [passenger pigeons](#), [salmon runs](#), [buffalo herds](#)

14:30 - [Degradation of the environmental movement](#)

15:05 - [Dust Bowl as historical example of climate degradation](#), [Ken Burns' The Dust Bowl documentary](#)

15:32 - In-video insert: [Dust bowl images](#), In-video insert: [Wheat farming images](#)

16:40 - [New Deal mobilization of millions for land restoration \(Civilian Conservation Corps\)](#), [Dust Bowl land restoration project](#)

17:15 - [Aldo Leopold and the Dust Bowl response](#)

17:34 - In-video insert: [Civilian Conservation Corps during Dust Bowl restoration](#)

17:35 - [Terracing systems and shelterbelts](#), [How plants to stop erosion](#)

18:25 - [Loess Plateau restoration](#) - [John D. Liu documentary](#)

18:42 - In-video insert: [Loess Plateau restoration](#)

19:15 - [Andrew Millison](#) and permaculture work across [Africa](#) and [South Asia](#) (*The Great Simplification* Episodes on such: [#178](#), [#64](#))

19:35 - [Didi Pershouse](#), [Walter Jehne](#), [Vijay Kumar Thallam](#) - [Natural farming movement in India: Andhra Pradesh Community Managed Natural Farming](#)

19:55 - [Ray Archuleta](#) and [Gabe Brown](#) on [regenerative agriculture](#) ([more info](#))

21:15 - [Women's self-help groups and microfinance cooperatives in India](#) ([more info](#))

21:25 - [Vandana Shiva](#) (*The Great Simplification* appearance: [#46](#))

21:45 - [Green Revolution collapse](#) and [Indian farmer suicides](#)

22:15 - [Creating your own soil amendments by culturing animal products and with other local materials](#)

22:37 - [Multi-species cover cropping](#)

22:45 - [Elaine Ingham](#) and the [Soil Food Web School](#)

23:22 - [Petrochemical industry capture of agriculture](#) and [ecological restoration](#)

24:10 - [Bread and circuses](#)

25:15 - Nate's Framework for Action: [Video](#), [Written Piece](#)

26:05 - [Early 1970s climate science discussions](#) ([more info](#)), [Rob Lewis: A Climate According to Life Substack](#) (referenced piece on climate as "two-legged")

26:30 - [Study of Man's Impact on Climate \(1971 MIT/SMIC report\)](#) → [1972 United Nations Conference on the Human Environment](#), [History of climate convenings](#)

27:18 - In-video insert: [Causes of climate extremes](#)

The Great Simplification

- 27:20 – [Predominant greenhouse gas is water](#), [Disrupting land disrupts the water cycle](#) (see [Anastassia Makareiva's The Great Simplification appearance: #193](#))
- 27:49 – [Sanderman et al. 2017: soil carbon loss over 12,000 years](#), [In-video insert](#)
- 27:58 – [~One-third of excess atmospheric carbon from land degradation, not fossil fuels](#)
- 28:52 – [Transpiration as Earth's natural heat pump \(more info\)](#), [Convective cycle](#)
- 29:25 – [Heat pumps are sustainable home energy systems](#)
- 29:55 – [Connection between technological solutions and economic activity](#)
- 30:40 – [Rio Earth Summit 1992](#) – 3 conventions: [Convention on Biological Diversity \(CBD\)](#), [Convention to Combat Desertification \(UNCCD\)](#), [Convention on Climate Change \(UNFCCC\)](#)
- 31:20 – [Global heating](#)
- 32:00 – [Living Systems Management](#)
- 32:25 – [~One-third of carbon increase has to do with land degradation*](#) but [water cycle degradation could be tipping that to over one-half](#)
- 33:55 – [Millán Millán](#), [Referenced podcast with the late scientist](#), [Overview of Millán's two-legged climate](#)
- 35:00 – [Cool Boulder: Nature-based solutions](#), [In-video insert](#)
- 35:20 – [Natural Climate Solutions paper \(2017, Griscom et al.\)](#)
- 35:35 – [Carbon markets and carbon sequestration "trend"](#), [Voluntary carbon markets](#)
- 36:20 – [Principles of natural climate solutions](#)
- 36:35 – [UN Environment Programme: Nature-based Solutions](#)
- 37:00 – [Emerson tradition](#) and [nature as separate](#)
- 37:15 – [Ecological restoration and the historical baseline problem](#)
- 37:45 – [Beaver extirpation](#) and [overgrazing](#) in the [Intermountain West](#), [Intermountain West ecology before European contact](#)
- 38:35 – [Restoration vs. regeneration \(more info\)](#)
- 39:42 – [Trophic level](#)
- 40:50 – [Global heating trajectories](#), [Worsening heatwaves, droughts, floods](#)
- 41:30 – [Boulder/Longmont desertification risk assessment](#), [Lynker Technologies remote sensing analysis](#), [City of Longmont Climate Risk Mapping Tool](#)
- 42:05 – [Soil and water conservation districts as watershed jurisdictions](#) (1930s)
- 42:30 – [Strip farming](#)
- 42:50 – [Colorado River Compact](#) and [near collapse](#)
- 43:25 – [Bare dirt convective cycles driving desertification](#)
- 45:20 – [Strait of Hormuz and energy supply complexity](#)
- 46:08 – [Carbon Pulse](#), [Economic Superorganism](#)
- 46:40 – 1970s: [Donella Meadows](#) & [Club of Rome](#) – [Limits to Growth](#)
- 47:15 – [Sustainability movement → resilience](#)
- 48:05 – [Paul Ehrlich](#) and [ecological overshoot from increased biocapacity](#) ([The Great Simplification: #9](#))
- 48:32 – [The Great Simplification](#)
- 49:00 – [Joseph Tainter](#) on [energy and complexity](#) ([The Great Simplification: #27](#))
- 49:05 – [Economic Superorganism](#)

The Great Simplification

- 49:15 – [Wide-boundary perspective](#)
- 50:45 – [Barriers to and how to engage community stewardship](#), [Issue of professionalization](#)
- 51:27 – [Herbicide spraying in Boulder Valley schools](#)
- 52:10 – [Boulder Community Land Stewards program](#)
- 55:30 – [Compounding disruptions: floods, heat, drought, fire, infectious diseases](#)
- 56:02 – [Societies with high social cohesion are most successful](#), [Social cohesion as climate resilience](#)
- 56:50 – [Local currencies](#)
- 57:45 – [ACORN community organizing in Albuquerque and Houston](#)
- 58:30 – [Financialization and marketization of community relationships](#)
- 1:00:15 – [Managing the forest-water nexus](#)
- 1:00:35 – [Soil moisture reservoirs](#)
- 1:00:50 – [Forest design for snowpack retention](#)
- 1:01:30 – [Anastassia Makarieva](#) and the [biotic pump theory](#) (*The Great Simplification*: #193)
- 1:02:20 – [Focus on fire mitigation in Colorado](#), [Forests as a water utility](#)
- 1:02:35 – [Walter Jehne on local land cover and climate dynamics](#)
- 1:03:05 – [Boulder/Longmont spring precipitation increase of 1.5 inches](#)
- 1:03:40 – [Western snowpack releasing three to four weeks earlier](#)
- 1:04:22 – [Elizabeth Heilman and Dale Strickman presentation on mastering water cycles – Boulder Soil Revolution conference](#), [In-video insert](#)
- 1:06:15 – [Changing our view on what is wealth](#)
- 1:07:48 – [Cool Boulder community partners](#), [In-video insert](#)
- 1:08:45 – [Greg Brown](#) song on Upper Peninsula neighborliness: [“Laughing River”](#)
- 1:10:19 – [Tom Chi](#) (*The Great Simplification* #120), [Tom Chi on humans and the biosphere](#)
- 1:10:35 – [Climate caused humans](#), [Agricultural Revolution](#), [Industrial Revolution](#)
- 1:11:45 – [Regenerative economy](#)
- 1:12:18 – [Resilient landscape contractor training programs](#)
- 1:13:15 – [Civilian Conservation Corps](#)
- 1:14:45 – [Global biodiversity loss drivers](#), [North American biodiversity loss](#)
- 1:15:50 – [Multi-layered canopies as photosynthetic “solar panels”](#)
- 1:16:20 – [Albedo and surface cooling from vegetation](#)
- 1:16:55 – [Donella Meadows on leverage points: consciousness as the deepest lever](#)
- 1:18:25 – [Importance of regional collaboration](#)
- 1:18:43 – Local existential risk example: Boulder, CO 2013 [wildfire](#) and [flooding](#)
- 1:19:33 – [Islands of coherence](#), [Wide-boundary perspective](#)
- 1:20:15 – [Importance of local governance in ecological restoration](#)
- 1:22:50 – [Reconnecting with the web of life](#)
- 1:23:25 – [Language of reciprocity with the living world](#)
- 1:25:25 – [Suburban lawn to native plant oasis case study](#)
- 1:27:50 – Advice for young people: Cultivating [relationship with living things](#) & [practical / handy](#) skills
- 1:30:45 – [Integrating living systems into every school's curriculum](#)
- 1:31:15 – [Local government as essential partner for scaling stewardship](#)