



Biodiversity for a Livable Climate

Restoring Ecosystems to Reverse Global Warming

November - December 2018 Newsletter

Greetings!

Our Annual Fall Conference, [Climate, Biodiversity, and Survival: Listening to the Voices of Nature](#), came and went by in a flash last month! But not without reminding us of the intelligence that lies within the natural world....be it in bacteria, elephants, bats, or even, slime mold!

It was the first conference I ever helped organize with Bio4Climate - *and what an experience it was!* Take a look at what some of our enthusiastic conference participants had to say about it:



Hampshire students and faculty with Heather Barnett outside the Harvard Museum of Comparative Zoology

“The event was splendid. I learned more in two days than I’ve learned in the last 20 years, and I was thrilled to be included.” - Elizabeth Marshall Thomas

“The speakers were amazing, top-notch science combined with bringing their specialties into the larger context, and their personal journeys into spiritual wholistic understanding of the world. Length of talks was good. Nice mix with art, poetry, a little music (more!) Workshops! Dialogue! Rice milk!” - Walter Kittredge

There are several more reviews on our [website](#). If you weren't able to join us this time, or would like to watch our speaker presentations again, be sure to check back on our website for conference videos that will be available in January.

For me, the conference was a journey of self-discovery and appreciation. To understand the intrinsic connections that exist within the natural world is to recognize how much we truly are a part of all of it. We have forged lasting relationships with species around us, simply by existing! How incredible is that?

And now, for a fun fact..

Did you know that you could become such great friends with a Mama Grizzly bear that she may ultimately trust you to look after her cubs as she goes off to relax in the woods for a while? I didn't. But that is just one of the wonderful stories I had the pleasure of hearing during the conference. You can find this incredible story about Charlie Russell in his [book](#) and hear all about it from Gay Bradshaw's presentation at our conference.

I have been pondering all of this as we head into the New Year, as I become more aware of our relationships with other species. I find this to be an enlightening first step to thinking about our survival on this great blue planet that we all call home.

Happy Holidays and here's to a promising year ahead,



Manjulika Das, Project Manager (see more about me below!)

A Slime Mold Workshop!

An Interactive Conference Takeaway...

A wonderful follow-up from Heather Barnett's fascinating talk about the intelligence of slime molds was the workshop led by a group of students from Hampshire College.

Slime molds typically exist as single-celled organisms. When one slime mold cell meets another, the membranes fuse so that two individuals exist in one membrane. The cells can keep adding on to the collective, or "plasmodium," so that each cell makes decisions that ultimately benefit the entire collective. The collective then finds intricate ways to connect to their favorite food source - oat flakes! Barnett's work demonstrates that slime molds have memory, can anticipate, and strategize.

In this picture, you can see the clump of slime mold on the lower edge of the petri dish forming a complex web searching for the oat flake - successfully!



Why is Charles Eisenstein Afraid of Global Cooling?



Charles Eisenstein is a most perceptive observer of global environmental challenges.

"Why on earth would I be concerned about global cooling? Given the dangers of global warming, one would think that signs of a cooling trend would be welcome news. Phew! Ecological catastrophe averted! Now we can go back to business as normal.

"This is precisely my concern. Business as normal is ruining the planet – regardless of whether the climate is warming or cooling.

To Adapt to a Changing Climate, Kyrgyzstan Revives Its Nomadic Past

The World Nomad games - dubbed as the Nomad Olympics - held in Kyrchyn Valley this year featured a blue, ornately decorated jar of glacial meltwater as its symbol of the games.

With rising temperatures, an increased number of landslide events and disappearing glaciers, it is no wonder that local communities in Kyrgyzstan chose to forego the classic Olympic torch as their symbol for the games this year. Concern has been mounting regarding the future of these communities, with the realization that one can only adapt to the changes that are to come with an altered climate scenario.

As it turns out, traditional ecological knowledge that the region once used may include the adaptive measures needed to forestall these threats. Fortunately, researchers are reviving such indigenous practices and bringing them back to the region.

Read about the indigenous knowledge and practices that the region has seen over [here](#).



Staff Notes - Welcoming . . .

. . . Manjulika Das - Project Manager

Hi there! My name is Manjulika Das and I am very pleased to have recently joined Biodiversity for a Livable Climate as its newest staffer and Project Manager. Earlier this year, I graduated from Brandeis University with degrees in Environmental Studies and International and Global Studies. Just before graduation, I attended the Massachusetts Land Conservation Conference where I was able to sit in on a workshop given by Bio4Climate. I was instantly inspired by the eco-restoration conversation, and the ways we can reverse global warming by restoring desertified lands.



How such restoration could at once draw down and sequester atmospheric carbon, bring

back water, and restore entire ecosystems and species diversity was critical to learn about, and I have become passionate about promoting awareness around it ever since.

As part of my work at Bio4Climate, I look forward to focusing on ways in which eco-restoration can be implemented in major cities in Asia that are currently facing the impacts of desertification - including my hometown of Bangalore, India. I am constantly inspired by success stories around the world, and look forward to working with the Bio4Climate team to making such successes a reality in these major cities.

John Todd's Love Letter to Planet Earth



A Book review by Jim Laurie, Staff Scientist

John Todd's book, "Healing Earth: An Ecologist's Journey of Innovation and Environmental Stewardship" is a toolkit elucidating 13 Ecological Design Principles with case studies and numerous color diagrams and photos. But most importantly, this book is a love story for the living planet that we all share. It shows us how Todd has taken on seemingly intractable problems and trusted that nature's biodiversity would self-organize and show us the way to a healthy future.

John Todd has been an innovator and visionary for restoring aquatic ecosystems for fifty years. His work began at New Alchemy on Cape Cod in 1969, where he developed food systems while cleaning and recycling water. Twenty years later, his approach restored Flax Pond on Cape Cod - long degraded from septic sludge and cranberry bog waste - to a healthy state for swimming and recreation. From this effort, Todd developed "13 Principles of Ecological Design" which were essential to me in the 1990s when I was building natural systems in Texas to clean chemical industry wastewater.

The book describes some of Todd's inventions, like wind powered catamarans, carrying 4-cell "eco-machines", to clean up ocean dead zones. It chronicles a plan that regenerated Appalachian lands and economies devastated by mountaintop removal - work that earned his team the 1st Buckminster Fuller Award in 2007. His recent projects span the globe in places like China, South Africa and the Middle East. Through learning and partnering with organisms from all six kingdoms of life, John insists that "we can go to bad places and do good things."

In his own words John Todd tells us, "It behooves one to pay close attention to the life history of organisms... It is the narratives of living entities that provide the alphabet of the design vocabulary." He insists that humans in the future can be a catalyst for healing. I recommend this book for all curious and concerned citizens, it will be an excellent educational and 'hands-on' textbook for middle school through college. Finally, I think you will enjoy two excellent presentations that John Todd gave at our Bio4climate Oceans Conference in 2016, [Ocean Restoration](#) and [Ecological Design](#).

Florence Reed on Agroecology: The Low-Hanging Fruit for Climate Stability and Biodiversity

**A Meetup on Sunday, January 27, 2019
6 - 9 p.m., Cambridge, Massachusetts**

Florence Reed is a prize-winning thought leader,



innovative practitioner, and deeply engaging speaker who believes that when people work together, things can change for the better.

She is the Founder of Sustainable Harvest International, a nonprofit organization dedicated to

working with rural Central American communities to implement sustainable farming practices and preserve tropical forests.

Find more details of our Meetup [here](#).

Save the Date: Tar Sands Songbook

Saturday, April 13, 2019
Harvard Epworth Church, Cambridge MA

A Benefit concert for the Better Future Project and Biodiversity for a Livable Climate by a musician and artist who grew up in Fort MacMurray, Alberta - long the land of oil and now the home of Tar Sands. She became a musician because she never wanted to see oil again. And now she's back . . .



Tanya Kalmanovitch is a Canadian violinist, ethnomusicologist and educator. Based in Brooklyn, Kalmanovitch's layered artistic research practice has rewarded her with extended residencies in India, Ireland, Afghanistan, Turkey, and Siberia.

And . . .

Here's another excerpt from our [Compendium of Scientific and Practical Findings Supporting Eco-Restoration to Address Global Warming](#). The article below is from [our third issue](#), July 2018, Vol. 2 No. 1 (p. 13):

Biotic Pump of atmospheric moisture as driver of the hydrological cycle on land

The authors examine ecological and geophysical principles to explain how land that is well away from the ocean can remain moist, given that gravity continuously pulls surface and groundwater into the ocean over time.

Compendium of Scientific and Practical Findings Supporting Eco-Restoration to Address Global Warming

Volume 2, Number 1, July 2018

Table of Contents

Note: Click on Table of Contents item for hyperlink to that section.

About Biodiversity for a Livable Climate	3
Suggested Citation	4
Acknowledgements	4
Conversion table	4
Introduction	5
Water, Life and Climate	5
Water Article Summaries	8
Evapotranspiration – A Driving Force in Landscape Sustainability, Eiselová 2012	8
New climate solutions, water cycles and the soil carbon sponge, Jehne 2018	10
Continental-scale consequences of tree die-offs in North America: identifying where forest loss matters most, Swann 2018	11

All freshwater on land originates in the ocean: it evaporates, is carried on air flux, and precipitates over the land. Coastal regions benefit from this cycle because they are near the ocean, but in coastal regions that do not have natural forests the amount of precipitation drops off as one moves away from the ocean, and that leaves the inland areas arid.

The authors propose the concept of a biotic pump to explain how large continents can be sufficiently moist deep into the interior, and abundant with rivers and lakes. Evapotranspiration, by which trees emit water vapor into the atmosphere, creates a partial vacuum when the water condenses. The vacuum pulls air and moisture horizontally over the coastal forests into the continental interior - the result is rain in the forest. In contrast, deserts cannot pull in water evaporating from the ocean because they do not have the green plants to provide such evaporative force.

This explains why ongoing deforestation, especially coastal deforestation on a large scale, threatens to cut off rain to the interiors of Earth's continents, thereby creating new deserts. The Amazonian rainforest is a prime example; similarly Australia's interior became a desert around the time the first humans arrived, and the authors speculate that early coastal deforestation was the cause. Restoring natural coastal forests may restore inland water cycles and reverse desertification.

This article illustrates the importance of biological relationships that are ecologically complex and poorly understood. It highlights the significance of the precautionary principle in assessing what we don't know when altering ecological processes, and taking preventive action in the face of uncertainty.

Makarieva, A.M. & V.G. Gorshkov, 2007, Biotic pump of atmospheric moisture as driver of the hydrological cycle on land, *Hydrol. Earth Syst. Sci.* 11:1013–1033
<https://www.hydrol-earth-syst-sci.net/11/1013/2007/hess-11-1013-2007-discussion.html>

[Compendium downloads](#) are free!

Last but not least . . .

You're concerned about the current state of the Earth, and we are working for you, our young people, and the diverse web of life we all rely on.

Not to put too fine a point on it, we just want to say that we're a small non-profit doing **BIG** things.

Our end-of-year fundraiser is here, and your support and involvement are very important! Please be sure to . . .



. . . and a monthly donation is **especially** appreciated . . .

Many thanks!

See what's happening on our social sites:



