January - February 2018
by Adam Sacks

A Tale of Two Points, Tipping

Dear Adam,

We are poised between two climate stories.

One is gloomy and leads to despair because it presents few opportunities for success, and even those opportunities are slipping away day by day as the ice melts, the methane bubbles out of the Arctic, sea levels and heat indices rise and many of our life-support systems unravel. Emissions reductions and alternative energy are crucial to rescue us, but they are is simply not enough on today's disrupted Earth.

The other story is one of hope and growing success in restoring ecosystems and cooling the biosphere, as well as reducing greenhouse gases. It is a story about the power and beauty of the natural world, the critical importance of biodiversity in creating resilience, and trust in the potential of ordinary people to restore a healthy planet. It is a story with an increasingly promising future.

The hopeful stories often get lost in the din and the drama, but they are everywhere. I see new ones every day, with many surprises and remarkable successes. Collectively they show us the way to a new era of understanding, abundance and peace.

Here's a dose of good news for today!

We have Nature's tools, let's use them!

If you haven't heard of Roland Bunch, here's your chance. He has decades of on-the-ground practical experience with farmers around the world, and is a leader in sharing the extraordinary potentials of wise agricultural practice and regenerative land management, both to feed the world and to address ecological degradation and climate disruption. Here's what he wrote in a recent e-mail:

> On at least 75% of the developing world's wastelands (basically those that have a pH of at least 4.5 and have not been polluted or salinized), we can have farmers

growing crops within one to two years at the national average for most smallholder farmers in sub-Saharan African nations. Within four to six years, they can be producing two or three times the national averages. And all this is being done while farmers make more net profit and produce more food than ever before.

I know this because we have done it in at least a dozen nations in Africa, Asia and Latin America. The most widely used and successful method is to intercrop bushy-type jack beans (Canavalia ensiformis) with crops such as maize, sorghum, millet or cassava (or plant any jack bean variety mono-cropped if none of these crops will grow at all). The following year, farmers can intercrop the jack bean with any of these crops (which will grow well enough to be worth the effort), and by the third year, harvests will be better on the wasteland than on the land they are presently cropping without using green manure and cover crops. Within another year, the land will be good enough that they can grow their normal crops, and switch from the jack bean (which produces no edible food) to other intercropped Green Manure and Cover Crops that will not only continue to improve soil fertility and drought-resistance, but produce high-protein leguminous grains that they can eat or sell.

Exactly how this can be done in temperate countries is, I believe, less well-known, but trials are presently being done.

For those who are interested in more information about all this, my book Restoring the Soil can be downloaded free here. A much more complete and updated 2nd edition will soon be available from ECHO/Florida. A summary of how green manure and cover crops are used is included below in ten case studies from Africa and Latin America that include systems used by a total of over 5 million farmers.

Onward!

At the NOFA Winter Conference in January (where we had the wonderful experience of listening to Gabe Brown for a day), we were introduced to the Land Stewardship Project (LSP). Founded in 1982, this Minnesota-based organization has three aims:

Events

Meetup, Potluck and Discussion!

Sunday, Feb. 25, 2018
6 - 9 p.m., Cambridge, MA

Eddie Robins on the Mysteries of Climate Modeling Unveiled!

Eddie is a physicist, businessman, and inventor who loves to plumb the

1. Foster an ethic of stewardship for farmland
2. Promote sustainable agriculture
3. Develop healthy communities.

And that's not all:

> LSP is dedicated to creating transformational change in our food and farming system. LSP's work has a broad and deep impact, from new farmer training and local organizing, to federal policy and community based food systems development. At the core of all our work are the values of stewardship, justice and democracy. LSP believes that by working together, culturally and racially diverse rural and urban people can take practical steps that result in greater stewardship of the land, more family farmers, healthy food for all and resilient, racially just communities.

It's an inspiring non-profit, a model for land and community. Though I've been in this regenerative space for over ten years, I'd never heard of them. This is an instance of the *Blessed Unrest* we wrote about in our August 2017 newsletter, the movement that nobody is leading and everyone is creating. The movement that has the best chance of saving life on Earth.

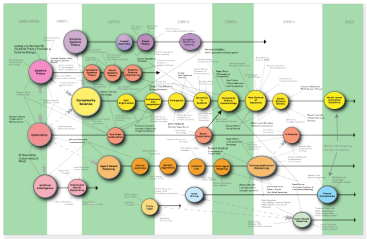
LSP has quarterly letters going back to 2002, full of news and stories about land and people projects, and a recent informative pocket guide to download, "Soil Health, Water & Climate Change." And I'm sure they'd be happy to hear from you!

Book Review

by Fred Jennings

mysteries of how things work.

Boston area friends, please join us in an entertaining and enlightening explanation of climate modeling, how it works to predict the future, how it doesn't - and why.



Map courtesy of Brian Castellani

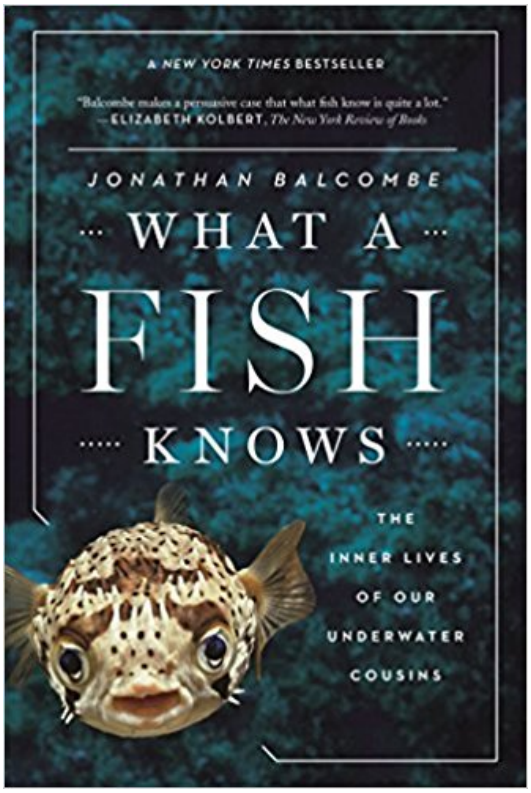
For up-to-date info on our local events

Join our Meetup Group

Stay Connected

We're a small non-profit with a big impact!

From our over 190 conference videos - to our innovative Compendium literature review- to our effective outreach to bring the eco-restoration and climate message to peace, conservation and other organizations - to filing healthy soils legislation - to our upcoming major effort to engage millennials and younger people in paradigm-shifting leadership - we have made inroads in changing the climate conversation to include the power of the natural world to provide us with comprehensive,



I'm an avid fly fisherman, so I love fish. This book reveals how smart and sociable they are. Who knew fish had such feelings and awareness?

Jonathan Balcombe offers us many surprising facts about fish including their perceptions, sensations, and thoughts, and their learning and breeding behavior. Fish are fooled by optical illusions so belief may play a role in their behavior. They also have sensitive hearing, smell and taste. They can navigate long distances by reading the Earth's magnetic field. They have pressure receptors that help them find struggling prey; some like to be touched, showing pleasured responses to being caressed.

Fish are sentient; they feel pain, and show awareness and learning. They exhibit emotions and experience stress, and play games with each other! Fish create cognitive maps to avoid being trapped by an ebbing tide, suggesting a long attention span; some can be taught to do tricks, or to respond in creative ways. Some use tools to get food: archerfish can hit a moving insect with water three feet away! Fish are social animals, moving together as if controlled by one mind. They recognize individuals, develop bonds, and chase strangers away.

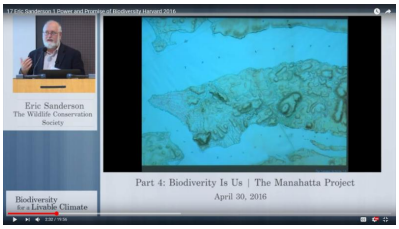
Scientists see them as unique personalities, reacting to mates' distress. The complexities in some of their

inexpensive and powerful solutions.

You can partake in the satisfaction of planet-saving work and see your contributions help transform today's eco-disasters to the peaceful, compassionate and abundant world that we all yearn for.

Many thanks, as always, for your interest and support!

Adam



From our conference video archive:

[The Power and Promise of Biodiversity, 2016]

[Eric Sanderson on Manahatta], the extra-ordinary ecosystem that used to be Manhattan island.

* * *

Check out the 195 videos from our [ten conferences] since 2014, with over 94,000 views on YouTube.

About

relationships suggest intelligence, e.g., some cooperate across species to capture prey.

Breeding behavior and practices vary. Male puffer fish create complex sand mandalas to attract females, while male sticklebacks build mating bowers. They engage in deceptive feints to be sure of reproductive success. Fish also care for their young, protecting eggs until they are hatched; male seahorses even carry and incubate their female's eggs. Breeding can be cooperative, or competitive and deceptive.

In other words, fish are much smarter than we realize. I've wondered for years whether they recognize an often-fished fly type, because they seem to avoid popular ones as a season progresses. Balcombe suggests they might.

> If there is one overarching conclusion we can draw from the current science on fishes, it is this: fishes are not merely alive - they have lives. They are not just things, but beings. A fish is an individual with a personality and relationships. He or she can plan and learn, perceive and innovate, soothe and scheme, experience moments of pleasure, fear, playfulness, pain, and - I suspect - joy. A fish feels and knows. How does that knowledge mesh with our relationship to fishes? (p. 207)

Jonathan Balcombe, *What a Fish Knows: The Inner Lives of our Underwater Cousins* (Scientific American / Farrar, Straus and Giroux, New York, 2016)

Biodiversity for a Livable Climate

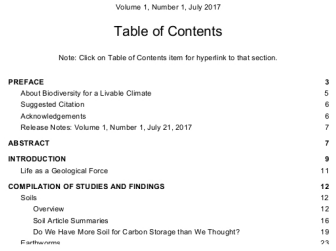
Through education, policy and outreach, our mission is to promote the power of the natural world to stabilize the climate and to restore biodiversity to ecosystems worldwide. Collaborating with organizations around the globe, we advocate for the restoration of soil, and of grassland, forest, wetland, coastal and ocean ecosystems - along with the associated carbon, water and nutrient cycles - to draw down excess atmospheric greenhouse gases, cool the biosphere, and reverse global warming, for the benefit of all people and all life on earth.

Learn more about our ongoing projects and upcoming events and find additional information and resources at bio4climate.org.

Revitalizing Ecosystems in Greater Boston to Survive Climate Change

Saturday, March 31, 2018

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



Volume 1, Number 1, July 2017

Table of Contents

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

PREFACE 3
About Biodiversity for a Livable Climate 5
Suggested Citation 6
Acknowledgements 6
Release Notes: Volume 1, Number 1, July 21, 2017 7
ABSTRACT 7
INTRODUCTION 9
Life as a Geological Force 11
COMPILATION OF STUDIES AND FINDINGS 12
Soils 12
Overview 12
Soil Article Summaries 16
Do We Have More Soil for Carbon Storage than We Thought? 19

Don't forget to check out . . .

our Compendium of Scientific and Practical

9:00 AM to 4:00 PM (EDT)

presented by **Massachusetts Sierra Club Greater Boston Group** and **Biodiversity for a Livable Climate**

Ecosystems across our highly developed region are threatened by climate change. Local ecosystems can help us to weather the coming climate shocks. These ecosystems are our allies, and there is much that we can do to revitalize them in our yards, streets, neighborhoods, parks, wetlands and waters. Come to this conference to be inspired and learn about current efforts and new possibilities for revitalizing ecosystems. You will leave with information on practical ways you can help right now.

Keynote speaker is **Tom Wessels**, author of **The Myth of Progress, Toward a Sustainable Future**, who will address the critical similarities between ecosystems and human society. Other presenters will describe the Ecology of Greater Boston Then and Now and a Survey of Current Ecological Conservation and Restoration Efforts. In afternoon workshops attendees will meet, connect with and learn from organizations that are practicing restoration and conservation of ecosystems in locations around the Greater Boston region: soils, trees, forests and other plants, wetlands, freshwater streams, lakes and ponds, coastal shores and salt marshes.

Cost: $10, please register on Eventbrite.

The Greater Boston Group of the Sierra Club (GBG) and Biodiversity for a Livable Climate are not affiliated with Harvard University. This conference of the Sierra Club GBG and Biodiversity for a Livable Climate is not a Harvard University program or activity.

Findings Supporting Eco-Restoration to Address Global Warming

and . . .

a new issue with growing support for nature's climate solutions will be released at the end of February - stay tuned!

The evidence is powerful and it's growing by leaps and bounds. We're collecting it in a series of comprehensive documents that will be updated every six months. The power of Nature is out of the closet - let's welcome her with open arms!

Download it here, pass it around!

Biodiversity for a Livable Climate | P.O. Box 390469 | Cambridge | MA | 02139