Eternal Bhoomi

For Earth Consciousness and Sustainable Living

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What price realism?

Is my approach unrealistic?

Look at what realists have done for us.

They have led us to war and climate change, poverty on an unimaginable scale, and wholesale ecological destruction.

Half of humanity goes to bed hungry because of all the realistic leaders in the world. I tell people who call me unrealistic to show me what their realism has done. Realism is an outdated, overplayed and wholly exaggerated concept.

Nature is realistic, and I would say that ours is the only civilization which is not. Who else goes to bed hungry? Not the snakes or the tigers or any other animal.

Nature does not need 'realistic' Tescos or Monsantos to feed its creatures. Our system of 'realistic' business leadership has totally failed.

- Satish Kumar

Excerpt from an interview with The Guardian's environment editor, John Vidal

BIG BUSINESS: *Major Destroyer of Diversity*

Most literate people who know the word 'biodiversity' will agree today that it is essential for long-term survival of humankind. Tribals and traditional farmers and many others living close to nature probably know this truth in their bones.

Biodiversity is essential for our basic survival needs of food and health. Biodiversity of bacteria, fungi and countless micro-organisms is essential for healthy soil and hence for sustainable agriculture; we need biodiversity of the oceans which also provide fish, a staple food of 20% of the world's population and of forests, our major carbon sinks, which continue to provide ingredients for medicines and much more. Even for genetically modified organisms, (which would destroy biodiversity, ironically), genes of diverse organisms are used to make new drugs and crops.

But the human species seems to be biting the hand that feeds it. Scientists say that several species are being lost every single day. By 2050, it is expected that 30% of species on earth today would be extinct and by 2100, more than half the species will be gone. Large numbers of species go extinct when their habitat is destroyed, as for instance, to grow palm oil or corn and soya for livestock required by the meat industry; Other large-scale activities and pollution that are causing mass extinction of species are chemical agriculture, overfishing, mining and innumerable factories that pollute the air, water and land.

Only a few species, such as the Dodo in Mauritius, the Passenger Pigeon in America and the Cheetah in India, have become extinct by people hunting them down individually and in small groups. All the major ways of destruction of biodiversity mentioned above would not be possible except by big businesses, with huge investments in machinery and equipment for mining, manufacturing / processing, marketing and media campaigns. Only big businesses possess the ability to inflict such massive destruction. A small fleet of fishermen on boats can never do as much damage as a huge mechanized trawler.

Yet in school textbooks, newspapers and even in various environmental fora, the term bio-diversity is mentioned largely in connection with the importance of preserving habitats or specific species – but rarely is the biggest culprit mentioned directly and openly. Why is it difficult to see the connections?

If we point a finger at the large businesses and multinationals, we often hear this reaction: after all, the big businesses are merely responding to the demand from millions of people like you and me. But is that so? Did human kind first hunger for countless consumer products and then these were provided by big businesses? Or are media and the drive for profits creating the demand? Another reaction is – isn't our huge exploding population the problem? True, increasing population does contribute to the crises, but it is high population combined with high consumption which is the bigger problem. And high consumption is driven by big businesses.

The issue is not that we should set the clock back and close all big businesses – but that we should be judicious about what kind of big businesses it is wise to continue and what kinds of huge corporations and their products we need to dispense with, because they only leave large populations bereft of their land and livelihoods, and the earth bereft of her fantastic bio-diversity. If we are to transition at all towards sustainable living and allow future generations their right to a healthy planet, we cannot escape naming the major culprits that destroys biodiversity - big businesses that are ever spreading their tentacles across the globe.

I do hope you enjoy this issue of Bhoomi, which offers several perspectives on biodiversity, understanding its value, not only in moral and scientific terms, but also to look at possible road maps for financial accounting of Natural capital, Earth Jurisprudence and Localisation of food as one of the possible solutions.

Seetha Ananthasivan

(seetha.bhoomi@gmail.com)

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Eternal Bhoomi is committed to bringing you holistic perspectives on Nature and sustainability from renowned writers and thinkers as well as practical ideas and examples of earth conscious living from people around the world.

Biodiversity

The idea of Biodiversity - and the complex abundant biosphere of which we are an inextricable part, are difficult to comprehend. And increasingly, the modern world does not seem to value Biodiversity as a fundamental law of the Earth as traditional societies did. Articles in this issue attempt to spell out features of this governing principle of Nature and help us re-connect with many overlooked aspects of life.

Vantage Point

Multi - view

Movie Review

Book Review

Poster

Forthcoming Bhoomi Event:

Bhoomi Utsav

- to celebrate Food and Farming

on October 2, 2014
at the Bhoomi Campus, Bangalore

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NATURE KNOWS US - DO WE KNOW NATURE?

Satish Kumar, eco-philosopher and Editor of the Resurgence Magazine, wonders about the nature of intelligence. Planet Earth, he says, is a self-organising, self-managing and self-correcting living organism. Wherever there is life, there is intelligence and consciousness. Eco-intelligence means the eco-system is an intelligent system.

Photo Courtesy: www.xcitefun.com

People are afraid of cold, heat, rain, snow, thunder, lightning, and the roar of wild animals. This disconnection and alienation from the biosphere leads to severe intelligence deficiency. We belong to a living Earth in an intelligent universe. This intelligence is not a human monopoly. Humans are intelligent, but people in urban and industrial societies are mostly living in human-made, technological and artificial environments: air-conditioned homes, cars and offices hold us within a cocoon which is disconnected from the eco-system and the natural world.

Recently I was talking with Kay Dunbar, the founder of Ways with Words, a literary festival which takes place every year at Dartington, UK. Kay said, "In urban and industrial civilisations people are increasingly losing Eco-intelligence." The moment I heard the word 'Eco-intelligence' it rang a bell. I realised that the article by Paul Stamets, 'Mushroom Magic', is exactly about that: mushrooms are intelligent. So are trees, rivers, oceans, animals and all the creatures of the Earth.

We belong to a living Earth in an intelligent universe. Intelligence is not a human monopoly. The universe is made of intelligence and consciousness. Planet Earth is a self-organising, self-managing and self-correcting living organism. Wherever there is life, there is intelligence and consciousness. Eco-intelligence means the eco-system is an intelligent system.

Humans are intelligent, but people in urban and industrial societies are mostly living in human-made, technological and artificial environments: air-conditioned homes, cars and offices hold us within a cocoon which is disconnected from the eco-system and the natural world.

Young people in our schools can recognise more than fifty logos of business corporations, but if you take them into the woods, very few will be able to name ten varieties of tree - not to mention insects and other creatures. We cannot read the book of Nature. Knowledge of the natural world is mostly obtained from TV channels.

People are afraid of cold, heat, rain, snow, thunder, lightning, and the roar of wild animals. This disconnection and alienation from the biosphere leads to severe intelligence deficiency. The great universities of the world are full of people who have technological and academic knowledge but are ignorant of the real world. Universities are no longer the centres of intelligence and knowledge - they have become the citadels of ignorance. They need eco-literacy and eco-intelligence.

Nature is not out there as an object to be manipulated and exploited. Humans are Nature too; ultimately life is one, manifesting itself in millions of forms.

It is the work of poets and writers to expose our ignorance and challenge the mindset which places the natural world out of human reach.

Satish Kumar *has been the guiding spirit behind a number of ecological, spiritual and educational ventures around the world. He is the Editor-in-Chief of Resurgence & Ecologist Magazine and the co-founder of the Schumacher College, U.K. He is also a member of the Panel of Advisors of Bhoomi College.*

'Nature Knows Us - Do We Know Nature?' featured in Resurgence issue 232. This article is reprinted courtesy of Resurgence & Ecologist.

Visit: http://www.resurgence.org

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What Price a Rainforest?

Andrew Mitchell urges the financial world to recognise our total dependence on natural capital.

Things of inestimable value, such as art, are often said to be priceless. Such value is, however, relative. A dying man in a desert might trade a priceless painting for a bottle of water. Nature, like art, is ephemeral. The beauty of a butterfly wing or the eye of a tiger is but a moment in evolutionary time. Currently, rhino horn is worth much more than gold. Rhinos are likely to be traded to extinction this century, the last few increasing in value like vintage wine. When the last is gone, will ecosystems fail? Will Wall Street crash? No, but a when a whole ecosystem is swept from the evolutionary table, we are playing a dangerous game with much higher stakes.

A banker once asked me: "Can you put a price on Nature?" The question is not as simple as it first seems. The answer is easy for Nature that we use every day. For example, this weekend I rather fancied 'The Queen of Sweden', and for £17 she was mine. Such a glamorous rose comes at a price at my local garden centre. In a supermarket the bewildering variety of biodiversity on offer - from haddock to haricot vert - comes neatly barcoded and valued with a swipe of my credit card.

But what price a rainforest, the most complex example of evolution, beauty and power that most people will never experience, except from the comfort of their sofa in the company of Sir David Attenborough on TV?

What price would they be prepared to pay, just to know that wilderness exists?

Existence value is essentially the basis upon which, for the last 30 years, the world's conservation movements have tugged at our heartstrings to persuade often poor countries to keep their rainforests standing. Unsurprisingly it has not worked. Yes, millions upon millions have been raised and we have a fine global network of protected areas, in many cases with good local laws, although they are not always enforced. Global awareness that deforestation should be stopped is now ascendant, but in recent decades there is something that has been missed, something that has made this battle unwinnable. It's what investors call the 'price signal'.

The global annual value of investments in the three agribusiness commodities that, together with timber and biofuels, cause most deforestation (beef, soya and palm oil) is about US$92.2 billion. The best global governments can muster to combat deforestation has been about US$6 billion over the last four years. Rising demand means good profits, so investors have fuelled the conversion of land from forests, reducing a giant stock of natural capital in the process. Because natural capital has no price signal in global markets, investors have not paid a cent for it, despite the major economic impacts deforestation causes on climate, water, food, energy and health.

Where does this tsunami of money against forests come from? The answer is 'institutional investors' such as your and my pension fund, asset managers and private family companies in a global financial sector community that is often unaware or accepting of the collateral damage its investments make to the world's rainforests. A relatively small number of people make the decisions controlling the movement of capital around the world. They do it, one of them said to me, "because trashing rainforests makes investors big money".

For palm oil investors, converting Indonesian peatlands to plantations has been a no-brainer for half a century. Unless cut down, a rainforest standing on peatlands makes little or no money at all, other than for the scattering of rural communities that live there, often without title to their land. Cash in hand is often enough for them to give up their rights, and standing timber sold can pay for the clearance and planting of a plantation that then pumps green gold for maybe 20 years at US$5,000 per hectare.

On a palm oil company's balance sheet you will not find a budget line for the thousands of slaughtered orang-utans in a holocaust of fires; in an auditor's note in an investor's portfolio there will be no mention of the billons of tons of CO2 emissions released from drained peat bogs. Nor does the vast flooded and rotting rainforest behind Amazonia's hydroelectric dams show up in an investor pitch to a pension fund. The price of a wedding ring will not include the human costs of families poisoned by the mercury used to extract the gold, downstream of Congo basin mines. One reason is that none of these things is listed on a Bloomberg terminal. Economists have a term for them all: 'externalities'.

The value of largely invisible and unaccounted for externalities in our financial system should not go underestimated. Pavan Sukhdev, former Head of Global Markets in India for Deutsche Bank, led a UN study, The Economics of Ecosystems and Biodiversity (TEEB), in 2010. His team concluded that the value of economic services lost to the world's economy just from deforestation was somewhere between US$1.4 and US$4.5 trillion - every year.

On a palm oil company's balance sheet you will not find a budget line for the thousands of slaughtered orangutans in a holocaust of fires; in an auditor's note in an investor's portfolio there will be no mention of the billons of tons of CO2 emissions released from drained peat bogs.

In 2012, a study by Trucost concluded that the natural capital impact of the world's largest companies amounted to about US$7.3 trillion per year; if they were put on the balance sheet, most of these companies would be technically bankrupt. Understandably, few CEOs relish the idea of doing so. The problem is that most businesses use an unbalanced sheet to measure profitability, excluding externalities from their true costs. This is a ticking time bomb for investors.

Nature is massively misvalued in many portfolios. Forward-thinking investors know this, but most will only change investment choices through the time-old drivers of fear or greed. For the price signal to change, the risk and reward ration related to natural capital will have to change - dramatically. The collapse of the world's financial system in 2008 was due to a systemic and large-scale misvaluation of property. As governments force financial institutions to re-engineer their financial systems, bankers, insurers and investors are wondering what else out there has the wrong price.

Right now the natural-capital business case is hard to make, but evidence is growing that the companies and investors of tomorrow may increasingly price Nature into business. In 2011, the footwear company PUMA became the first to publish an environmental profit and loss account. The Norwegian sovereign wealth fund, the world's largest, announced that it will review its investment portfolio for impacts on deforestation, and subsequently disinvested from 40% of its palm oil holdings.

In June last year, at the Rio+20 Earth Summit, I launched the Natural Capital Declaration with the UN Environment Programme's Finance Initiative. This groundbreaking declaration attracted support from governments and almost 40 signatories in the financial sector, who all committed themselves to work towards taking natural capital into account in their future investment and lending decisions.

The idea of accounting for Nature is now rapidly gathering pace. The World Bank's WAVES (Wealth Accounting and Valuation of Ecosystem Services) focuses mainly on national accounting by governments, The Economics of Ecosystems and Biodiversity for Business Coalition is doing the same for corporations, and this year the Natural Capital Declaration published its Roadmap for the financial sector, with four working groups headed by banks aiming to deliver tools and methodologies to enable this industry to better understand its impacts and dependencies on natural capital.

Taken together these initiatives could herald either a revolution in the world economy, or a last gasp of idealism as the wave of aspirational growth rolls on regardless of environmental costs. Being an optimist, I prefer the first, because, at least where rainforests are concerned, it is time to try something radical, and history shows that placing no value on keeping rainforests standing up is the surest way to see them cut down.

Andrew Mitchell *is a Zoologist with extensive field experience in Asia, Africa and Latin America, combined with a 30 year career spanning research, journalism, broadcasting, policy and environmental project management.*

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EARTH JURISPRUDENCE

Ian Mason

Humility, generosity, patience and restraint are the four pillars on which Earth Jurisprudence is founded. They will be the principles at the heart of the transition to climate stability, biodiverse environments and resilient livelihoods.

Contemporary problems with climate change, loss of biodiversity and impoverished livelihoods are symptoms, not causes. The causes lie in the human psyche and result from losing connection with the natural world. Any strategy to resolve them requires the human race to reconnect with Nature in two ways: through the Earth in all its wonder, and through the spiritual wealth and beauty of human nature.

Earth Jurisprudence helps with both of these. Earth Jurisprudence is a philosophy of law that sees the Earth as the proximate teacher of a Great Jurisprudence in which the universe, not humanity, is the primary lawgiver. Where our technological culture and skill have persuaded us that humans are master of all things, Earth Jurisprudence invites humanity to engage as rational and loving participants in something much greater than we are.

Humility is therefore the first lesson of Earth Jurisprudence. This is the humility of the craftsman who surrenders to his materials, is guided by them and allows them to speak and sing for themselves; of the sculptor who finds and reveals beautiful forms in the rock; of the teacher who finds and reveals the talents and strengths of her pupils and students; of the scholar who knows how little, not how much, we know of ourselves and this universe and contemplates their beauty and mystery in dumbfounded awe; of the lawyer who learns that law is discovered, not made, and that justice, not will, is the natural organising principle of human society and Earth community. It is the humility of the husbandman or woman who tends and cares for the soil and who loves its healthy and generous abundance.

Generosity is the second lesson of Earth Jurisprudence. Wherever we look, Nature brings forth abundance. Everything is provided for through a wonderful web of giving and receiving, each as important as the other. To give and to give and to give is only to end up depleted and exhausted. To take and to take and to take is to end up engorged and even more exhausted. The natural balance is to give while receiving what is needed to be able to carry on giving. The economics of Earth Jurisprudence is not about scarce resources; it is about proper use, distribution and replenishment of natural abundance.

Patience is the third lesson of Earth Jurisprudence. In the universe and in Nature, everything comes in its own good time. Years follow the Earth round the sun, season following season with the tilt of the axis. Months and tides follow the moon; days and nights follow the spin of the Earth. Each has its own time providing activity and rest, harvest and replenishment, change and consistency, all in proper time.

With patience comes restraint, the fourth lesson of Earth Jurisprudence. This is how the natural balance of abundance is maintained. If any species, any person, takes more than its necessary due, there will be a shortfall somewhere. If the grasslands expand, forests and jungles contract; where the forests expand grasslands contract: each the inevitable counterpart of the other. Where human demands expand, Mother Earth's other children lose their diversity and their livelihoods, and sooner or later people do too.

In civil affairs we take this law of restraint so for granted that we barely notice it. Human beings naturally live in human communities and that is only possible when we restrain our more aggressive tendencies. We are all moved, at times, by anger and fear, jealousy or desire but we are socially conditioned to restrain them in the interest of the human community. Such restraint in the civil sphere is the foundation of civil freedom. Earth Jurisprudence, the law of the Earth herself, teaches that similar restraint is a necessary condition of successful life in the community of Nature. It also teaches that Nature's abundance is soon depleted if this condition is not observed. Just as in civil affairs, our freedom of action in Nature is curtailed by respect for a wider community.

It is no mere coincidence that these lessons of Nature are also the lessons of so many traditions of spiritual wisdom. Human nature is part of the Nature of the universe, not separate from it. The very same principles that unlock and maintain the treasury of natural abundance also unlock the inner treasury of human nature. Shakespeare, through the voice of Henry V, was right to declare that "In peace there's nothing so becomes a man as modest stillness and humility..." Human nature offers the deepest peace, the fullest understanding and the profoundest happiness and satisfaction to those who follow and practise these simple principles taught by Nature.

Earth Jurisprudence as a philosophy of law can be taken as a personal code of self-development and as a founding philosophy of law for societies. Communities and societies embed their understanding of life, Nature and the world around them in the laws and customs they adopt for themselves. In earlier times the philosophy, or jurisprudence, of Natural Law gave us principles of human rights and government which are embedded in modern ideals of democracy and the rule of law.

But Natural Law jurisprudence, at

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Earth Jurisprudence offers principles for a natural way of living. It works at the individual level by offering lifestyle choices based on humility, generosity, patience and restraint. It works at the level of law and policy by pointing decision-makers towards the needs of the whole natural world, enabling humans to live according to universal regulations.

least in its later interpretations, was mostly about human nature and the relations between humans and God. Earth Jurisprudence adopts a wider view. Seeing a divine presence in every detail of the universe, it draws its principles and conclusions from Nature's lessons about the interaction of humanity and the universe in the immediate context of the Earth. Even if it is not seen as manifesting divine presence, this context remains the same and equally valid.

Where Natural Law gave principles of human rights and of obligations of the powerful towards the weak, Earth Jurisprudence adds obligations to the natural world. Where Natural Law taught us not to discriminate unfairly between human genders and races, Earth Jurisprudence requires that we respect the integrity and intrinsic value of the Earth and all its species, affording them rights and protections where human carelessness, rapaciousness or ignorance places them under threat.

At the level of states, nations and governments, Earth Jurisprudence translates into what Cormack Cullinan has called Wild Law and which also appears as Community Ecological Governance. Wild Law is the practical application of Earth Jurisprudence principles in the human lawmaking process whether through customs, statutes, common law judgements or international instruments. Community Ecological Governance is the customary regulation of life that people find who listen to the voice of Nature.

In short, Earth Jurisprudence offers principles for a natural way of living. It works at the individual level by offering lifestyle choices based on humility, generosity, patience and restraint. It works at the level of law and policy by pointing decision-makers towards the needs of the whole natural world, enabling humans to live according to universal regulations. It works at the spiritual level by being attuned to the spiritual needs and aspirations of human nature in wholesome harmony with the natural and spiritual universe. Perhaps most importantly, it works at the human level by reminding us that the human and natural worlds can co-exist in a mutually enhancing partnership where we are truly friends of the Earth.

Ian Mason *is a barrister who is also Head of Law and Economics in the School of Economic Science. For further information about Earth Jurisprudence visit www.earthjurisprudence.org*

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Everything I Need to Know I Learned in the Forest...

Vandana Shiva

Courtesy: Navdanya.org

"Indian civilization has been distinctive in locating its source of regeneration, material and intellectual, in the forest, not the city. India's best ideas have come where man was in communion with trees and rivers and lakes, away from the crowds."

- Rabindranath Tagore

My ecological journey started in the forests of the Himalaya. My father was a forest conservator, and my mother became a farmer after fleeing the tragic partition of India and Pakistan. It is from the Himalayan forests and ecosystems that I learned most of what I know about ecology. The songs and poems our mother composed for us were about trees, forests, and India's forest civilizations.

My involvement in contemporary ecology movement began with "Chipko," a nonviolent response to the large-scale deforestation that was taking place in the Himalayan region.

In the 1970s, peasant women from my region in the Garhwal Himalaya had come out in defense of the forests.

Logging had led to landslides and floods, and scarcity of water, fodder, and fuel. Since women provide these basic needs, the scarcity meant longer walks for collecting water and firewood, and a heavier burden.

Women knew that the real value of forests was not the timber from a dead tree, but the springs and streams, food for their cattle, and fuel for their hearths. The women declared that they would hug the trees, and the loggers would have to kill them before killing the trees.

A folk song of that period said:

These beautiful oaks and rhododendrons,

They give us cool water

Don't cut these trees

We have to keep them alive.

In 1973, I had gone to visit my favorite forests and swim in my favorite stream before leaving for Canada to do my Ph.D. But the forests were gone, and the stream was reduced to a trickle.

I decided to become a volunteer for the *Chipko* movement, and I spent every vacation doing pad yatras (walking pilgrimages), documenting the deforestation and the work of the forest activists, and spreading the message of Chipko.

One of the dramatic Chipko actions took place in the Himalayan village of Adwani in 1977, when a village woman named Bachni Devi led resistance against her own husband, who had obtained a contract to cut trees. When officials arrived at the forest, the women held up lighted lanterns although it was broad daylight. The forester asked them to explain. The women replied, "We have come to teach you forestry." He retorted, "You foolish women, how can you prevent tree felling by those who know the value of the forest? Do you know what forests bear? They produce profit and resin and timber."

The women sang back in chorus:

What do the forests bear?

Soil, water, and pure air.

Soil, water, and pure air

Sustain the Earth and all she bears.

Beyond Monocultures

From *Chipko*, I learned about biodiversity and biodiversity-based living economies; the protection of both has become my life's mission. As I described in my book *Monocultures of the Mind*, the failure to understand biodiversity and its many functions is at the root of the impoverishment of nature and culture.

The lessons I learned about diversity in the Himalayan forests I transferred to the protection of biodiversity on our farms. I started saving seeds from farmers' fields and then realized we needed a farm for demonstration and training. Thus Navdanya Farm was started in 1994 in the Doon Valley, located in the lower elevation Himalayan region of Uttarakhand Province. Today we

conserve and grow 630 varieties of rice, 150 varieties of wheat, and hundreds of other species. We practice and promote a biodiversity-intensive form of farming that produces more food and nutrition per acre. The conservation of biodiversity is therefore also the answer to the food and nutrition crisis.

Navdanya, the movement for biodiversity conservation and organic farming that I started in 1987, is spreading. So far, we've worked with farmers to set up more than 100 community seed banks across India. We have saved more than 3,000 rice varieties. We also help farmers make a transition from fossil-fuel and chemical-based monocultures to biodiverse ecological systems nourished by the sun and the soil.

Biodiversity has been my teacher of abundance and freedom, of cooperation and mutual giving.

Rights of Nature On the Global Stage

When nature is a teacher, we co-create with her - we recognize her agency and her rights. That is why it is significant that Ecuador has recognized the "rights of nature" in its constitution. In April 2011, the United Nations General Assembly - inspired by the constitution of Ecuador and the Universal Declaration of the Rights of Mother Earth initiated by Bolivia - organized a conference on harmony with nature as part of Earth Day celebrations. Much of the discussion centered on ways to transform systems based on domination of people over nature, men over women, and rich over poor into new systems based on partnership.

We need to overcome the wider and deeper apartheid - an eco-apartheid based on the illusion of separateness of humans from nature in our minds and lives.

The U.N. secretary general's report, "Harmony with Nature," issued in conjunction with the conference, elaborates on the importance of reconnecting with nature: "Ultimately, environmentally destructive behavior is the result of a failure to recognize that human beings are an inseparable part of nature and that we cannot damage it without severely damaging ourselves."

Separatism is indeed at the root of disharmony with nature and violence against nature and people. As the prominent South African environmentalist Cormac Cullinan points out, apartheid means separateness. The world joined the anti-apartheid movement to end the violent separation of people on the basis of color. Apartheid in South Africa was put behind us. Today, we need to overcome the wider and deeper apartheid—an eco-apartheid based on the illusion of separateness of humans from nature in our minds and lives.

In *The Religion of the Forest,* Tagore wrote about the influence that the forest dwellers of ancient India had on classical Indian literature. The forests are sources of water and the storehouses of a biodiversity that can teach us the lessons of democracy—of leaving space for others while drawing sustenance from the common web of life. Tagore saw unity with nature as the highest stage of human evolution.

The Dead-Earth Worldview

The war against the Earth began with this idea of separateness. Its contemporary seeds were sown when the living Earth was transformed into dead matter to facilitate the industrial revolution. Monocultures replaced diversity. "Raw materials" and "dead matter" replaced a vibrant Earth. Terra Nullius (the empty land, ready for occupation regardless of the presence of indigenous peoples) replaced Terra Madre (Mother Earth).

This philosophy goes back to Francis Bacon, called the father of modern science, who said that science and the inventions that result do not "merely exert a gentle guidance over nature's course; they have the power to conquer and subdue her, to shake her to her foundations."

Robert Boyle, the famous 17th-century chemist and a governor of the Corporation for the Propagation of the Gospel Among the New England Indians, was clear that he wanted to rid native people of their ideas about nature. He attacked their perception of nature "as a kind of goddess" and argued that "the veneration, wherewith men are imbued for what they call nature, has been a discouraging impediment to the empire of man over the inferior creatures of God."

The death-of-nature idea allows a war to be unleashed against the Earth. After all, if the Earth is merely dead matter, then nothing is being killed.

As philosopher and historian Carolyn Merchant points out, this shift of perspective—from nature as a living, nurturing mother to inert, dead, and manipulable matter—was well suited to the activities that would lead to capitalism. The domination images created by Bacon and other leaders of the scientific revolution replaced those of the nurturing Earth, removing a cultural constraint on the exploitation of nature. "One does not readily slay a mother, dig into her entrails for gold, or mutilate her body," Merchant wrote.

What Nature Teaches

Today, at a time of multiple crises intensified by globalization, we need to move away from the paradigm of nature as dead matter. We need to move to an ecological paradigm, and for this, the best teacher is nature herself.

This is the reason I started the Earth University/Bija Vidyapeeth at Navdanya's farm.

The Earth University teaches Earth Democracy, which is the freedom for all species to evolve within the web of life, and the freedom and responsibility of humans, as members of the Earth family, to recognize, protect, and respect the rights of other species. Earth Democracy is a shift from anthropocentrism to ecocentrism. And since we all depend on the Earth, Earth Democracy translates into human rights to food and water, to freedom from hunger and thirst.

Because the Earth University is located at Navdanya, a biodiversity farm, participants learn to work with living seeds, living soil, and the web of life. Participants include farmers, school children, and people from across the world. Two of our most popular courses are "The A-Z of Organic Farming and Agroecology," and "Gandhi and Globalization." (for details on the courses, see page 52)

The Poetry of the Forest

The Earth University is inspired by Rabindranath Tagore, India's national poet and a Nobel Prize laureate.

Tagore started a learning center in Shantiniketan in West Bengal, India, as a forest school, both to take inspiration from nature and to create an Indian cultural renaissance. The school became a university in 1921, growing into one of India's most famous centers of learning.

The forest teaches us enoughness: as a principle of equity, how to enjoy the gifts of nature without exploitation and accumulation.

Today, just as in Tagore's time, we need to turn to nature and the forest for lessons in freedom.

In "The Religion of the Forest," Tagore wrote about the influence that the forest dwellers of ancient India had on classical Indian literature. The forests are sources of water and the storehouses of a biodiversity that can teach us the lessons of democracy—of leaving space for others while drawing sustenance from the common web of life. Tagore saw unity with nature as the highest stage of human evolution.

In his essay "*Tapovan*" (Forest of Purity), Tagore writes: "Indian civilization has been distinctive in locating its source of regeneration, material and intellectual, in the forest, not the city. India's best ideas have come where man was in communion with trees and rivers and lakes, away from the crowds. The peace of the forest has helped the intellectual evolution of man. The culture of the forest has fueled the culture of Indian society. The culture that has arisen from the forest has been influenced by the diverse processes of renewal of life, which are always at play in the forest, varying from species to species, from season to season, in sight and sound and smell. The unifying principle of life in diversity, of democratic pluralism, thus became the principle of Indian civilization."

Teachers for a Living World

While Ivy League schools marvel at India's economic growth, Vandana Shiva's University of the Seed looks to the earth—and Gandhi—for guidance.

It is this unity in diversity that is the basis of both ecological sustainability and democracy. Diversity without unity becomes the source of conflict and contest. Unity without diversity becomes the ground for external control. This is true of both nature and culture. The forest is a unity in its diversity, and we are united with nature through our relationship with the forest.

In Tagore's writings, the forest was not just the source of knowledge and freedom; it was the source of beauty and joy, of art and aesthetics, of harmony and perfection. It symbolized the universe.

In "The Religion of the Forest," the poet says that our frame of mind "*guides our attempts to establish relations with the universe either by conquest or by union, either through the cultivation of power or through that of sympathy.*"

The forest teaches us union and compassion.

The forest also teaches us enoughness: as a principle of equity, how to enjoy the gifts of nature without exploitation and accumulation. Tagore quotes from the ancient texts written in the forest: "Know all that moves in this moving world as enveloped by God; and find enjoyment through renunciation, not through greed of possession." No species in a forest appropriates the share of another species. Every species sustains itself in cooperation with others.

The forest teaches us enoughness: as a principle of equity, how to enjoy the gifts of nature without exploitation and accumulation. Tagore quotes from the ancient texts written in the forest: "Know all that moves in this moving world as enveloped by God; and find enjoyment through renunciation, not through greed of possession." No species in a forest appropriates the share of another species. Every species sustains itself in cooperation with others.

The end of consumerism and accumulation is the beginning of the joy of living.

The conflict between greed and compassion, conquest and cooperation, violence and harmony that Tagore wrote about continues today. And it is the forest that can show us the way beyond this conflict.

Dr. Vandana Shiva *wrote this article for What Would Nature Do?, 2012 issue of YES! Magazine.*

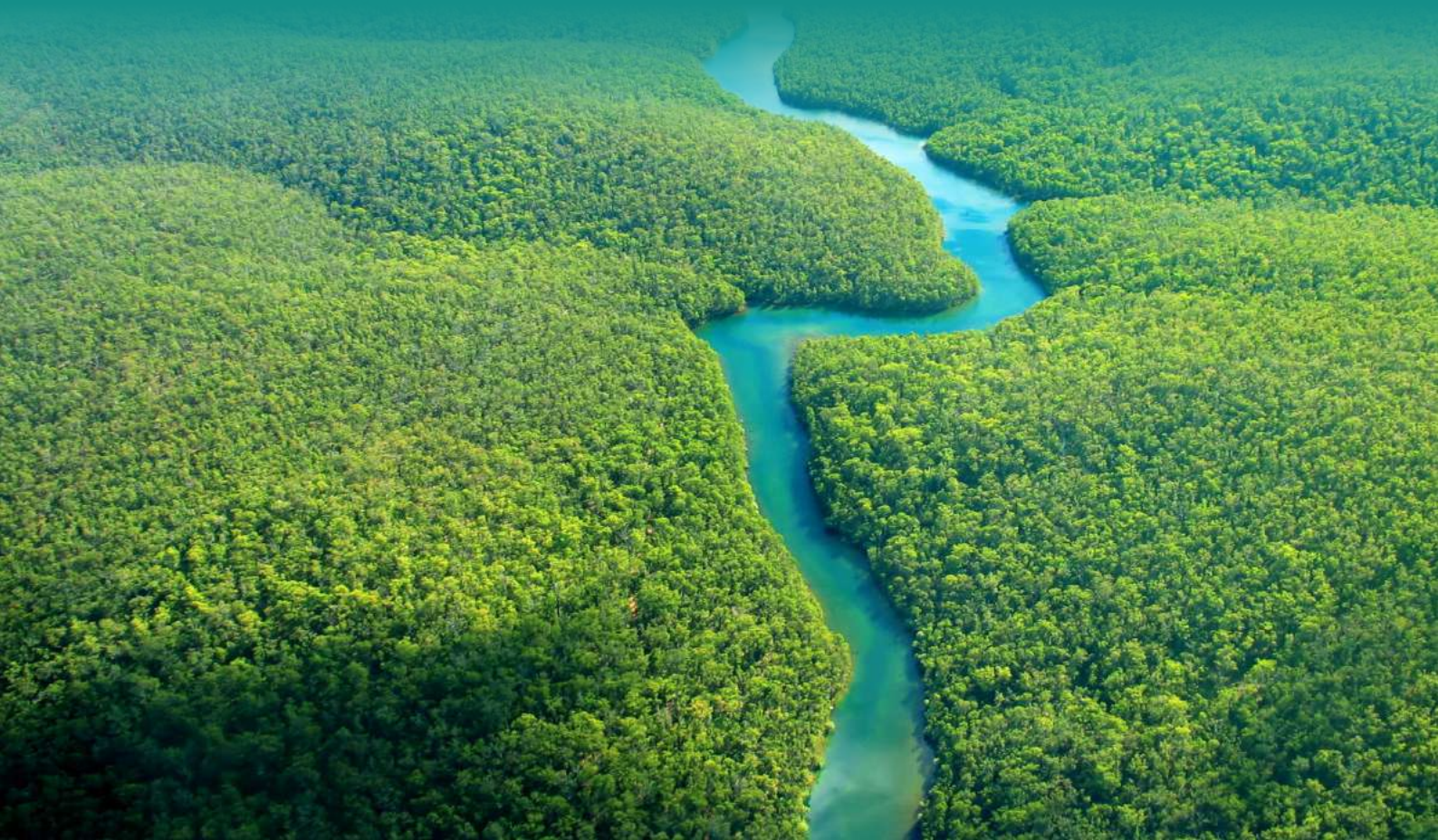
Vandana Shiva is an internationally renowned activist for biodiversity and against corporate globalization, and author of Stolen Harvest: The Hijacking of the Global Food Supply; Earth Democracy: Justice, Sustainability, and Peace; Soil Not Oil; and Staying Alive. She has worked in the areas of sustainability, social justice and peace for over four decades.

She is also a member of Bhoomi Network's panel of advisors.

Earth, Teach Me

Earth teach me quiet ~ as the grasses are still with new light.
Earth teach me suffering ~ as old stones suffer with memory.
Earth teach me humility ~ as blossoms are humble with beginning.
Earth teach me caring ~ as mothers nurture their young.
Earth teach me courage ~ as the tree that stands alone.
Earth teach me limitation ~ as the ant that crawls on the ground.
Earth teach me freedom ~ as the eagle that soars in the sky.
Earth teach me acceptance ~ as the leaves that die each fall.
Earth teach me renewal ~ as the seed that rises in the spring.
Earth teach me to forget myself ~ as melted snow forgets its life.
Earth teach me to remember kindness ~ as dry fields weep with rain.

- A Prayer of the Native American 'Ute'



The role of diversity in the NATURAL WORLD

Overgrown Redwood Log and Wildflowers by David Sifry

*Author and activist **Derrick Jensen** says that apart from destroying bio-diversity on Earth, we are collapsing the diversity of knowledge and expressions we consider important.*

Printed below are excerpts from an interview with him by the MOON magazine.

The MOON: What does diversity do for ecosystems? Why is diversity important?

Jensen: That's like asking why can't everyone be an oncologist. What kind of functioning society would that be? Nature creates diversity because there are so many roles to be performed in an ecosystem that one species can't perform them all. In the natural world, you need plants to convert sunlight into substance; pollinators to pollinate the plants; animals to eat the plants and fertilize the soil; predators to keep small animal populations in check; and still other species to dispose off dead carcasses. In fact, you need so many more species and complex interrelationships than we even have the capability to recognize. It's like the David Ehrenfeld line: "Not only is the world more complex than we think it is, the world is more complex than we are able to think it is."

For example, I'm sitting here in a second-growth redwood forest, which also includes willows and cedar and fir trees. When they deforested parts of the Pacific Northwest of Douglas firs, they tried replanting them, but the firs didn't do well. Eventually they discovered that there is a fungus associated with firs in the forest, and voles associated with the fungus, and this three-way relationship is important to the health of the firs. The fungus lives off the firs, the voles eat the fungus and defecate fungus spores, the spores are rich in nutrients that have been broken down sufficiently that the root tips of the firs can absorb them, and the firs flourish. It's easy for humans to think, "Oh, who cares if we lose a certain kind of fungus or rodent?" We don't realize that the loss of the fungus and the vole could also mean the loss of fir trees—which in our utilitarian-motivated culture means losing everything from construction materials to toilet paper—in addition to such non-commercial goods as beauty, oxygen, and shade.

Of course, there's a moral dimension to this too. I believe that other species have a right to exist regardless of their potential usefulness to us. It's extremely arrogant to think that what we find useful is the arbiter of a species' right to exist—to say nothing of the fact that our definition of utility changes over time. For example, a couple hundred years ago there were thousands of varieties of apples. But now we've bred apple varieties down to a few that have optimal taste and nutritional value and we've lost all the rest. Some of the genetic diversity we've bred out of apples perhaps protected them from certain kinds of pests. By breeding that characteristic out, that capacity is gone—forever.

That's the weakness in all monocrop agriculture. When you plow a field, you destroy all of the bacteria, fungi, and other life in the soil and you destroy the habitat for all of the creatures who lived in the rich variety of plants that once occupied the land. So where can the insect and disease predators live? Then, by planting a single crop, you create the perfect habitat for the pests of that crop—and no one else. The pest mows through the crop like wildfire. It's what makes agriculture so dependent upon artificial pesticides today.

Nature tends to increase the diversity of an ecosystem over time. We're taught that evolution advances through survival of the fittest, which implies competition. But if you look more closely you see that the creatures

who have survived in the long run, survived in the long run by improving their environment over time. One of the ways you improve your environment over time is by increasing its diversity. The more diverse an environment, the more "niches," or opportunities, there are for other organisms to live. The more organisms there are in an ecosystem, the more stable it is—like legs on a table.

Nature tends to increase the diversity of an ecosystem over time. If you look more closely you see that the creatures who have survived in the long run, survived by improving their environment over time. One of the ways you do that is by increasing its diversity. The more diverse an environment, the more "niches," or opportunities, there are for other organisms to live. The more organisms there are in an ecosystem, the more stable it is."

You know, one aspect of diversity we seldom think about is soil diversity. It's said that a spoonful of healthy soil contains millions of organisms, including beneficial species of bacteria, fungi, protozoa, micro-arthropods and nematodes. These organisms help plants obtain nutrients and water from the soil, to prevent nutrient losses, to protect them from pathogens, and to degrade compounds that could inhibit growth. Some mycelial networks extend for literally hundreds of acres through the soil. There are fungi in Oregon that span several square miles and are thousands of years old. These mycelial networks transfer nutrients from the edges of the forest, where there is sunlight, into the depth of the forest where sunlight may not be able to penetrate. And that's just one example of the role diversity plays in an ecosystem. How can we be so arrogant to think that we know enough to obliterate networks of life that have existed for millennia? Diversity confers resilience. It also confers stability. It's like the legs of a table; the more legs you have, the less likely your table will fall over.

The MOON: Can we re-diversify our planet?

Jensen: I don't know. I think it's highly probable we'll kill the planet—because too many people are cut off from the awareness that we are killing the planet. That's another aspect of diversity we've lost: diversity of experience; diversity of intelligence. That's what I write about in Culture of Make Believe. We watch television or sit on the internet and think we have this diversity of choices—the fishing channel, the sports channel, the home improvement channel; or Yahoo, AOL, or Al-Jazeera. But we're still just watching television; we're still just sitting at the computer.

I live in a forest and when I first moved here about ten years ago, you literally could not have a conversation outside at night because the frogs were so loud. About five years ago, that changed. I asked one of my neighbors if he'd noticed that the frogs were a lot quieter now; or there were a lot fewer frogs; and he said no, he hadn't noticed that. He hadn't been outside at night. But I assure you that if the San Francisco Forty-Niners went away, he'd know it instantly.

I'm not saying that because I dislike sports; I love sports. I'm just saying that "civilization" has created a uniformity of experience which is cutting us off from the feedback loops that would alert us to the grave danger we're in. We don't realize what's happening to our home because we don't actually live there. We live in a manufactured culture in which Angelina Jolie is more real to us than the songbirds outside our window. In fact, I can only identify the songs of about five birds, but I can name fifty to one hundred corporate jingles. That's part of the diversity problem: we're collapsing the diversity of knowledge and experiences we consider important.

We also operate under the illusion that human intelligence is superior to all other intelligence. But there are all sorts of intelligences operating on the planet that we're not even aware of. Is that intelligent? For example, trees release hormones in the fall that tell the fish it's time to slow their metabolism because winter is coming; it's time to conserve energy. In the spring, they release other hormones that tell the fish it's okay to wake up now and start moving again. That's a level of interspecies cooperation we've only recently become aware of. Yet we still suffer from human supremacism—the idea that we're superior to the rest of nature and that the laws of nature don't apply to us.

There's a quote I find particularly chilling from Frederick Winslow Taylor, the "father" of scientific management and one of the leaders of the so-called Efficiency Movement. He said, "In the past, man was first. In the future, the system will be first."

That's what we've come to. We think "the system" must go on, even though the system is one of converting the living to the dead. That's what we call "production," or "progress." The system doesn't recognize the value of a redwood tree until it's turned into two-by- fours.

The operator of the Daiichi nuclear plant at Fukushima said that the world would continue to rely on nuclear power because people couldn't live without electricity. But that's wrong. People lived without electricity for thousands of years. What we can't live without is a functioning planet. So it's not the system that must go on. The system is what needs to be stopped. It's the planet that must go on.

***Derrick Jensen** has authored twenty-one books and is often called the philosopher-poet of the environmental movement. In addition to his published books, he writes for Orion, Audubon, and The Sun Magazine.*

This is an excerpt from an article originally published in The MOON magazine and is reprinted here with permission. moonmagazine.org/derrick-jensen-the-role-of-biodiversity-in-the-natural-world-2013-09-30/

Indigenous Knowledge Can Help Preserve Biodiversity

Marianne de Nazareth

Modelled on the Intergovernmental Panel on Climate Change (IPCC), the new IPBES is mandated to bridge the gulf between authoritative biodiversity-related information, knowledge, insights and effective policy-making.Building synergies between science and traditional knowledge forms is one focus of its initial work program.

How many of us humans reading this piece realise that the planet is losing species 100 to 1,000 times faster than the natural extinction rate. International experts assembling for high-level global biodiversity meetings say knowledge co-production with indigenous peoples has growing importance to help stall this. The IPBES (UN Intergovernmental Platform on Biodiversity and Ecosystem Services) experts cite the importance of 'co-production' of information with indigenous people. In fact, they note, processes that merge multiple sources and types of knowledge already help manage challenges as diverse as wildfires and reversing the depletion of fresh water sources with rain water harvesting.

Building synergies between science and traditional knowledge forms was one focus of the initial work program for the UN's new Intergovernmental Platform on Biodiversity and Ecosystem Services.

Modelled on the Intergovernmental Panel on Climate Change (IPCC), the new IPBES is mandated to bridge the gulf between authoritative biodiversity-related information, knowledge, insights and effective policy-making. The organization has 115 member nations.

There are interesting examples which have been around for decades and available from almost every world region. These lessons for ecosystem and natural resource management in indigenous and local knowledge include:

South China:

Rice-fish co-culture, a farming technique for over 1,200 years in south China, was recently designated a "globally-important agricultural heritage system," by the UN Food and Agriculture Organization. A mutually-beneficial relationship has been documented: fish reduce rice pests; rice moderates the fishes' environment, a relationship that reduces by 68% the need for pesticides and by 24% the need for chemical fertilizer compared with monocultures. The findings suggest modern agricultural systems might be improved by exploiting other synergies between species.

Australia, Japan, Indonesia:

Indigenous fire management techniques developed thousands of years ago, and which today protect large landscapes in Australia, Indonesia, Japan and Venezuela. Early dry season controlled burns create patchy mosaics of burnt country, minimizing destructive late dry season wildfires and maximizing biodiversity protection. In Australia, such projects also create credits sold in carbon markets that support traditional livelihoods.

Arctic:

Animal herd management in the Arctic, where remote satellite sensing, meteorology and modelling are complemented with the indigenous knowledge of Sami and Nenets reindeer herders to co-produce datasets. The indigenous observers are able to make sense of complex changes in the environment through qualitative assessment of many factors, complementing scientists' quantitative assessment of variables. This holistic approach produces better monitoring and more effective decision-making.

Kenya, China, Bolivia:

An important source of resilience for indigenous peoples, who have long and successfully managed the risks and impacts of natural variability and extreme weather. With experience in observing closely and reporting the impacts of changing conditions, indigenous communities have always preferred growing a number of traditional crop varieties over a single high-yield and high-risk, mono-cropping system. Analyses of three agricultural systems, in China, Bolivia and Kenya, found that maintaining diverse traditional cropping strategies and access to seeds has been essential for adaptation and survival.

Tanzania, Thailand:

Rotational farming, as practiced in the highlands of Tanzania, illustrates a unique and ingenious farming system involving pits surrounded by four ridges on steep slopes to

plant maize, beans and wheat on a rotational basis. During the rainy season, the pits act as reservoirs preventing the destructive effects of surface runoff from the steep cultivated slopes. An elaborate traditional rotational farming system in northern Thailand, meanwhile, features a complex land use mosaic including a sacred forest, a forest line serving as a firebreak and wildlife path, a transition zone protecting biodiversity habitat, livestock grazing on fallow land, home gardens, rice paddies on terraced slopes and lowland fields, and drought tolerant rice in cleared areas upland.

Pacific Islands:

Sustainable management of marine resources, as practiced by many Pacific island communities, traditionally involves the use of area and time-based restrictions to facilitate marine resource recovery. These traditional management systems involve a range of strategies, including tabu areas (sacred sites), species-specific prohibitions, seasonal and area closures to create networks of refuges, gear restrictions, behavioural prohibitions, totemic restrictions and food avoidance - all promoting a balanced approach to resource management.

India:

Rainwater harvesting, thought to have originated 6,500 years ago and revived in the 1970s when the Alwar district of India's Rajasthan state was declared a 'dark zone'- indicating severe drought and rapid depletion of groundwater. Many traditional rainwater harvesting structures that had fallen into disrepair were refurbished and new ones built, all of which helped replenish the aquifers.

Need to build synergies between science and indigenous knowledge

IPBES emphasizes that science must accommodate indigenous and local knowledge and world views in an appropriate, respectful manner. The expert group emphasizes that indigenous peoples' and communities' conceptualization of relationships between life's ecological, social and spiritual spheres is reflected throughout their management and knowledge systems.

These should complement science-based representations and form an integral part of the IPBES conceptual framework through "a meaningful and active engagement . . . in all relevant aspects of its work and across all of its functions."

Says the founding Chair of IPBES, Zakri Abdul Hamid: "Our task is complex but essential. We must identify gaps in knowledge and build capacity for the interface between policy and knowledge - in all its forms."

"That means developing a process through which scientific and policy communities recognize, consider and build synergies with indigenous and local knowledge in the conservation and sustainable use of biodiversity and ecosystem services."

The rapid decline of biodiversity and ecosystem services has been called "the 6th great extinction episode" in Earth's history, he notes, and "the role of IPBES is to narrow the gulf between the wealth of scientific knowledge about biodiversity and the paucity of effective action to reverse damaging trends."

The rapid decline of biodiversity and ecosystem services has been called "the 6th great extinction episode" in Earth's history, he notes, and "the role of IPBES is to narrow the gulf between the wealth of scientific knowledge about biodiversity and the paucity of effective action to reverse damaging trends."

* Identify and prioritize key scientific information for policymakers and catalyse generation of new knowledge by engaging with key scientific organizations, policymakers and funding organizations

* Perform regular assessments of knowledge on biodiversity and ecosystem services and their interlinkages

* Support policy formulation and implementation by identifying and developing relevant tools and methodologies for decision makers; and

* Prioritize capacity-building needs to improve the science-policy interface and then provide and call for financial and other support for the highest-priority needs.

The draft work programme addresses the collapse of bee and other pollinator populations in many parts of the world with a proposed fast-track assessment of pollination and food production to be completed by next March.

This assessment will address trends in pollinators and pollination dynamics, drivers of change, how pollination declines and deficits have affected human well-being and how effective the response has been to date.

The work programme also calls for a global assessment of land degradation and restoration focusing on the effect of degradation on biodiversity values, ecosystem services and human well-being and the state of knowledge of ecosystem restoration. Also proposed is a global assessment of invasive alien species and the threats posed to biodiversity, ecosystem services and livelihoods.

Marianne de Nazareth *is a freelance writer and adjunct faculty, St. Joseph's College of Media Studies and COMMITS. She is also a media fellow with the UNFCCC, UNEP & the Robert Bosch Stiftung and travels the world covering Climate Change and its effects on biodiversity and the planet.*

Words are biotic...

Is it a coincidence that areas of linguistic plurality are also areas of biodiversity?

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"Four of the regions with the lowest tree-species diversity overlapped with the four of the least linguistically diverse areas." Two of the three regions with the highest tree species also had the highest linguistic diversity.

Anvita Abbi, professor of linguistics at the Jawaharlal Nehru University, studied the language spoken by the Great Andamanese tribe and concluded that their language could be among the few paleolithic languages that exist in the world and may constitute the sixth language family in India. "When metaphors die, ideas pass away and a way of thinking is buried," says Sakar Khan. He is not a linguist. He is a musician. He plays the khamaicha — a four-string instrument. Somewhere in his eighties, he is the most revered musician of his tribe — the langas of Rajasthan. Reticently he shares his feelings, "I see today's generation ignore the khamaicha. I can't help it. Music, like language, can provide only a metaphor for a way of life. When people lose a way of life, their language struggles to survive."

Exactly what is lost when a language dies? Do we also lose what can be called a biotic world-view, the local knowledge and wisdom of which a language is a repository?

Most linguists agree that about 6,000 languages are spoken today. Not all languages spoken in the world have been 'discovered'. Reports occasionally come in of new languages and communities being found in the islands of Indonesia, Papua New Guinea, the South American or Central African rainforests. Some 83-84 per cent of languages spoken are endemic (local to the space in which they are prevalent). They are spoken only in a particular country and not shared between boundaries. In fact about 4,000-5,000 out of the 6,000 odd languages are spoken by indigenous tribes of the world. These can be as disparate as the 10-million strong Quechua descendents of the Inca civilisation, or fewer than 10 people in the Gurumulum band of Papua New Guinea.

Hotbeds

Most of the world's languages are spoken in the tropical countries. There are two great belts of high density of languages. One belt runs from the West African coast through the Congo basin to East Africa, and the other runs from India and peninsular Southeast Asia into the islands of Indonesia, Papua New Guinea, and the Pacific. The seventeen major countries of these two belts (including India) contain about 60 per cent of the world's languages and only nine per cent of the geographical land area. They also harbour a great many of the world's species. Just a casual glance at the biodiversity hot spots of the world and the geographical spread of languages shows a remarkable similarity.

Terralingua (a Washington-based non governmentalorganisation that campaigns for linguistic rights) along with World Wildlife Fund (WWF) carried out a cross mapping of indigenous peoples' locations onto a map of the globally two hundred most fragile and important biological regions. WWF mapped out nearly 900 ecoregions of the world and found 238 of them to be of the utmost importance for biological diversity. Tropical rainforests, the world's most biodiversity-rich areas, covering just seven per cent of the planet's land surface, are home to at least 50 per cent, and perhaps as many as 90 per cent, of the world's species. These ecosystems were also found to be the most culturally diverse, harbouring at least 1,400 distinct indigenous and traditional peoples.

Mere coincidence?

Eric A Smith, professor at the Department of Anthropology, University of Washington, USA, studied the relationship between linguistic

and cultural diversity in native North America and the biodiversity of the region. He recorded more than 275 languages spread in the domains of the native North American spoken at the time of contact with the Europeans.

The results were quite revealing. Says Smith, "Four of the regions with the lowest tree-species diversity overlapped with the four of the least linguistically diverse areas." Two of the three regions with the highest tree species also had the highest linguistic diversity. Smith concluded that linguistic diversity seems to be driven by environmental reasons as well as socio-political ones."

David Harmon, co-founder of Terralingua, and author of In Light of Our Differences: How Diversity in Nature and Culture Makes Us Human, points out that several large-scale bio-geographical factors affect both biological and linguistic diversity. These factors include the existence of large landmasses with varying terrains and ecosystems; island territories, especially with internal geophysical barriers; tropical climates, fostering higher numbers and densities. He also suggests a simple phenomenon. When people begin to live close to nature and modify it as they adapt to it, they develop a specialised knowledge about their environment. In order to convey this vital knowledge they develop lingual tools specific to their ecological regions and contexts.

Repositories of wisdom

There is ecological knowledge inscribed in indigenous languages. When the languages vanish these treasure troves are also lost. This largely undocumented knowledge base is humanity's lifeline. Over the ages, indigenous peoples have developed innumerable technologies. They have devised ways to farm deserts without irrigation and produce abundance from the rain forest without destroying the delicate balance that maintains the ecosystem. They have explored the medicinal properties of plants; and they have acquired an understanding of the basic ecology of flora and fauna.

N K Bohra, from the Arid Research Centre, Jodhpur, narrates Rajasthan's folk songs and verses that announce the severity of impeding famine or drought on the basis of ecological indicators. M D Muthukumaraswamy, editor of the journal Indian Folk life, tells of therukoothu — the traditional theatre form. In it, the clown often challenges the hero to a verbal feat. For example, the challenge could be to name all the flowers in the surrounding valley, or birds of a certain kind. This feat is also 'performed' in the textual form. In the anthology Patthupaatu, one travelling bard describes to another all the places he has been to. In the process, of course, the landscape is sketched out in detail. In one particular song, called the Kurincipaatu, the bard lists 99 flower varieties that he saw in the valley.When ecological values and codifications get lost with the languages, very often people left behind are mere shadows of what they once were.

Reinventing the wheel

Such loss of valuable knowledge is not only the indigenous people's loss but that of the entire humankind. Michael Balick, director of the New York Botanical Garden's Institute of Economic Botany, notes that only 1,100 of the earth's 265,000 species of plants have been thoroughly studied by Western scientists, but as many as 40,000 may have medicinal or undiscovered nutritional value for humans. Many are already used by tribal healers.

Theodore Bhaskaran, a Chennai-based linguist, narrates the following: In Tamil the local dialects and vocabulary is being lost. So environmentalists re-invent the wheel. One example: there was a conservation effort in the Gulf of Mannar to save the dugong (sea-cow). There is a local word for the sea cow, but environmentalists, not knowing this, distributed pamphlets among farmers and fisherfolk that said save the 'kadalpashu' — a literal translation of 'sea cow'. The result was that the locals thought the idea was to prevent cows from falling into the sea. The point is there is a problem if local dialect is not conserved. Embedded in the language is some feeling of the role the animal plays in the environment.

Eugene S Hunn, professor of Anthropology at the University of Washington, USA, studied the Zapotec people, more specifically the Mixtepec Zapotec for how the traditional inventory of the people in the language fared against that developed in the dominant Spanish or English languages. He asks: "What is the value of the local Zapotec to the programme of inventorying?" He answers: "They are the ones who point out distinctions between many flowers and their subspecies I miss out on. They are obsessed with flowers. They have far greater refined classification of marigolds than the usual botanical system." He details how their classification of oak trees and century plants or magueys is so well done. They classify them by characteristic habits and primary uses, whether for fibre, medicinal use or habitat for some animal.

Language rights

Take the case of India — a country of more than 300 languages — with only 16 state-recognised languages. Devi (from the organisation, *Bhasha)* says, "While it is not essential that all languages be recognised as state languages, a state conscious of the existence of these languages is the first step in the right direction."

What are the tools to fight a battle against the 'killer languages'? Are these battles at all worthwhile? Says Abbi, "Where will the languages survive if we cut down the entire forest of the Onges in the Little Andaman islands, turn them into refugees on their own homeland. The Gonds of central India, the Gaddis in Himachal Pradesh, the Penan tribe of Indondesia…all face a question of livelihoods." But small steps at the ground level help change the cataclysmic direction in which humanity moves now. Devi's organisation *Bhasha* is taking such small steps in Gujarat, reaching out to Bhils and other numerous tribal people, turning them into anthropologists who define their own terms of development.

The Angami Nagas believe in the beauty of multitude of languages. They have a myth that tells of people constructing a tower to heaven. As they build it, the goddess gets afraid that if they reach her abode, she will not have enough gifts to shower on them and that will create disharmony. So she bestows upon them the gift of languages. Unable to understand themselves they are unable to build the tower and live in peace. Question is: can the iconic Tower of Babel be turned on its head?

***Nitin Sethi, Anushka Meenakshi & Proteek Dey**, DTE, December 31, 2002*
Original article: http://www.downtoearth.org.in/content/words-are-biotic
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Keeping Faith in Biodiversity

Flickr cc Brian Jeffrey Beggerly

We are often told how most religions essentially convey the universal message of peace and harmony, but often overlooked is the significance of revering Nature and celebrating bio-diversity intrinsic to these religions. We take a look at six major religions through the lens of bio-diversity.

We are often reminded that all religions essentially convey the universal message of peace and harmony, but seldom is the significance of revering nature and celebrating biodiversity intrinsic to them emphasized. We take a look at six major religions through the lens of biodiversity.

Biodiversity in HINDUISM

Hindu philosophy has always regarded rivers, mountains, lakes, animals, flora, the mineral world, as well as the stars and planets as manifestation of God and worshipped them. All the sacred texts contain the earliest messages for preservation of environment and ecological balance. Nature, or Earth, has never been considered a hostile element to be conquered or dominated. In fact, man is forbidden from exploiting nature.

Pancha Mahabhutas (The five great elements) - space, air, fire, water, and earth - are seen as the foundation of an interconnected web of life. The human body is composed of and related to these five elements. The nose is related to earth, tongue to water, eyes to fire, skin to air, and ears to space.

In the Charak Sanhita, destruction of forests is taken as destruction of the state, and reforestation an act of rebuilding the state and advancing its welfare.

The Rig Veda too, is a celebration of nature, its hero being the God of Rain. Nature has been beautifully described in Rig Veda as:

"Nature's beauty is an act of God.

Let us feel the touch of God's invisible hands in everything beautiful.

By the first touch of His hand rivers throb and ripple.

When He smiles the sun shines, the moon glimmers, the stars twinkle, the flowers bloom.

By the first rays of the rising sun, the universe is stirred;

the shining gold is sprinkled on the smiling buds of rose;

the fragrant air is filled with sweet melodies of singing birds,

the dawn is the dream of God's creative fancy." (Rig Veda 1.6.3)

Biodiversity in ISLAM

Islamic teachings and philosophy are intricately close to the concept of biodiversity conservation. It has repeatedly been mentioned in The Quran through various verses that is important to protect, preserve and to maintain the balance of nature.

The Quran mentions the aesthetic functions of these creatures as objects of beauty in addition to their other functions. God has made in plants and animals that which excites wonder and joy in man's soul. It also mentions other functions which these creatures perform and which man may not perceive. God has said, *"Do you not see that to God bow down in worship all things that are in the heavens and on the earth - the sun, the moon, the stars, the mountains, the trees, the animals..."* (Quran 22:18)

Islam emphasizes all measures for the survival and perpetuation of these creatures so that they can fully perform the functions assigned to them. Love for nature and its conservation has been strongly backed in teachings of many Islamic Sufis, poets and philosophers. The absolute destruction of any species of animals or plant by man cannot be justified; nor should any be harvested at a rate in excess of its natural regeneration.

Biodiversity in SIKHISM

The Sikh scripture, Guru Granth Sahib, declares that the purpose of human beings is to achieve a blissful state and to be in harmony with the earth and all of God's creation. Guru Har Rai, the seventh Sikh Guru developed Kiratpur Sahib as a town of parks and gardens. Located on the banks of tributary of the Sutlej, he planted flower and fruit bearing trees all over the area. The Sikh Gurus built many Gurdwaras surrounded by large pools which supported marine life, especially fish. The groups of trees planted near holy places are called "Guru Ke Bagh" or the Garden of Guru.

Further, 'Gurbani' refers to various species of trees, eulogizing species, which are useful to the world and its various beings and creatures. The Gurus inferred that it is not the girth, size, or beautiful flowers that determine the significance of a tree but its usefulness that makes it important. The trees that have sanctity in Sikhism include Bohr, Pipli, Imli, Amb, Neem, Ritha, Kalpand

Ber. In 'Guru Granth Sahib', even the parts of the trees have been looked upon as God.

Perhaps no other religion has given so much importance to vegetation the way Sikhism has. The world started talking about the environment and ecological balance only during the past 3 - 4 decades, while the Gurus realised their significance more than 500 years ago.

Biodiversity in CHRISTANITY

Throughout the Bible, we find the mention of a variety of trees. We also find citation of birds, wild animals, sea creatures and other animals in Bible. The King James version of the Bible mentions seven flowers, seven vegetables, several spices, and thirty-seven differently named trees.

Cedar Tree: It was chosen for building not only the temple of the Lord but also Solomon's house and other public edifices in Jerusalem. The Cedar forests in Lebanon were famous and people traveled great distances just to see them.

Oak Tree: In the time of the patriarchs, Jacob took the false idols from the members of the household and buried them under an oak tree. When the Land of Israel was oppressed by Midian, the Angel of the Lord appeared under an oak tree where it made a covenant with Gideon to deliver Israel from their oppression.

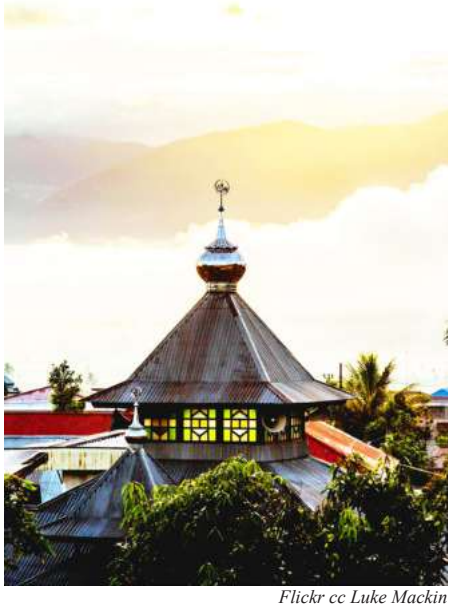
Palm Tree: The Palm tree is a sign of joy and happiness and also the symbol of life. This may be the reason why a huge number of martyrs in the Book of Revelations were dressed in white robes and holding Palms in their hands.

According to the Bible, all creatures are good in themselves and they are not just for our use. In this regard, Pope John Paul II said - *'Nature should be respected and preserved so that by establishing a healthy proper relationship with it, people can be led to contemplate the mystery of God's greatness and love.'*

Biodiversity in BUDDHISM

It is the belief of Buddhism that moral consciousness, the human mind, the human body, the external world consisting of fauna and flora and society are all intricately interconnected. The original, genuine teaching of Buddhism is a theory of universal interconnectedness, which, by dismantling the separate, continuous ego-self, leads to identification with and responsibility for the whole world of beings.

There are a lot of forests and trees that are directly associated with Gautama Buddha. Creation of gardens near the monasteries and stupas seem to have been derived from the description of the gardens of Nalanda and Takshasila during the time of Lord Buddha.



Flickr cc Luke Mackin

It is the belief of Buddhism that moral consciousness, the human mind, the human body, the external world consisting of fauna and flora and society are all intricately interconnected. The original, genuine teaching of Buddhism is a theory of universal interconnectedness, which, by dismantling the separate, continuous ego-self, leads to identification with and responsibility for the whole world of beings.

Animals have always been regarded in Buddhist thought as sentient beings. Furthermore, animals possess Buddha nature (according to the Mahāyāna school) and therefore possess an equal potential to become enlightened. Moreover, the doctrine of rebirth held that any human could be reborn as an animal, and any animal could be reborn as a human.

The Jātaka stories which tell of past lives of the Buddha in folktale fashion, frequently involve animals as peripheral or main characters, and it is not uncommon for the Bodhisattva to appear as an animal as well. The stories sometimes involve animals alone, and sometimes involve conflicts between humans and animals; in the latter cases, the animals often exhibit characteristics of kindness and generosity that are absent in the humans.

Biodiversity in JAINISM

"Ahimsa-paramo-dharmah" - is one of the basic virtues of Jainism, which means non-injury to living beings. Practice of non violence is not just limited to humans or animals but is extended to all forms of life.

An important principle of Jainism as expressed in Sutrakrta-anga (1.11.33) is: *'A man should wander about treating all creatures as he himself would be treated'.*

A famous tale about the merciful King Megharath exemplifies the teachings of the Jain dharma – it is the utmost duty of everyone to protect and help those who are less fortunate than us. For example, 'Aparigraha'; the discipline of non-possession, prevents one from indulging in the acquisition of material goods, one of the root causes of current ecological concerns.

Jainism believes that an awareness of the sacred relationship between humans and the environment is necessary for the health of our planet, and for survival of mankind. We are called to the vision of our Tirthankaras and their philosophy that life, for its very existence and nurturing, depends upon a bountiful nature.

*Extracts from the website of **Uttarakhand Biodiversity Board**, an autonomous statutory Body constituted under Biological Diversity Act 2002. It has been created for conservation of the natural heritage of the State including the unique, biodiversity rich and fragile ecosystems such as forests, grasslands, wetlands and mountain ecosystems and their species including wild and domesticated biodiversity, genetic resources and ecological and environmental processes.*

Looking beyond the spread on our tables

The more we are urbanized, the lesser the chances are that we know about our foods, and the rich food culture that prevailed in our country. Not many know that India is a mega-diversity region with over 51,000 plant species existing, but with hardly a handful being cultivated. **Devinder Sharma** shares his experiences of a visit to a tribal food fest.

"Over the past 50 years, we are seeing that diets around the world are changing and they are becoming more similar - what we call the 'globalised diet,'" Colin Khoury, a scientist from the Colombia-based Centre for Tropical Agriculture told the BBC. "This diet is composed of big, major crops like wheat, rice, potato and sugar. It also includes crops that were not important 50 years ago but have become very important now, particularly oil crops like soybean."

While wheat has long been a staple crop, it is now a key food in more than 97 per cent of countries listed in UN data. And from relative obscurity, soybean has become 'significant' in the diets in almost three-quarter of the world's nations. The study is published in the Proceedings of the National Academy of Sciences of USA.

The decline in crop diversity due to the emergence of a globalised diet has limited the ability to supplement the energy-dense part of the diet with nutrient rich foods. Amid the crops recording a decline in recent decades are millets, rye, yams, sweet potatoes and cassava, reports the BBC .

This report is among several others which have highlighted the threat to food security as well as nutritional security from a 'globalised diet'. We are all responsible directly or indirectly for this decline. If I were to ask you to count the foods that you eat, I bet you would not be able to name more than a few. Wheat, rice, tomato, cucumber, apple, banana ... and you begin to reel out the names you know. Not many can name even twenty. Try a little harder, and you will end up probably with another ten. If you are a little more aware, you might struggle with a few more names. That's it.

That's how narrow and limited our food sense has come to be. The more we are urbanised, the lesser the chances of our knowing about our traditional foods, and the rich food culture that once prevailed in this country.

The disconnect with the huge diversity of food has built up over the ages and has actually alienated modern civilization from the virtues of the vast repository of biological wealth that once existed. Modern living has snapped the symbiotic relationship that existed with nature. Not many know that India is a mega-diversity region with over 51,000 plant species in existence, with hardly a handful of these being cultivated.

Learning from the 'uneducated'

When Laxmi Pidikaka, a tribal woman from southern Odisha explained to me the importance and relevance of each of the 1,582 food species that were displayed at the Adivasi Food Festival held in February 2014, at Munda village in Rayagada district, I was not only amazed by the richness of the food around us, but also came back with a consciousness of how uneducated I was when it came to mankind's basic requirement of food.

Of the 1,582 food species on display (and that included different kinds of fish, crabs and birds that are part of the daily diet of some tribals), as many as 972 were uncultivated. Yes, you heard it right. Uncultivated foods.

A dozen tribes living in Odisha, Madhya Pradesh, Chhattisgarh, Jharkhand and Maharashtra had gathered at the Adivasi Food Festival to celebrate their foods, as an appreciation of the traditional food cultures linked to their age-old farming practices that provide them nutritional security while protecting and conserving nature's bounty.

Members from the Kondh, Koya, Didai, Santhal, Juanga, Baiga, Bhil, Pahari Korva, Paudi Bhuiyan and Birhor tribes, representing more than 300 villages spread across the tribal heartland, came to showcase their foods. They also spent the next day discussing how to protect the traditional farming system from the onslaught of the National Food Security Act that aimed at providing them with 5 kg of wheat, rice or millets.

"We don't need your food security system," Minati Tuika of Katlipadar village told me. "The more you open

ration shops in our villages, the more you force us to abandon our own food security system, built by our forefathers so painstakingly over the centuries. Please leave us alone."

But why was she so angry with what most policy makers and planners see as development? Don't most educated elite think that tribals are uneducated and uncivilized, and therefore all our efforts must be directed towards bringing them into the fold of what we consider 'mainstream'?

"Don't teach us what development is. We conserved and preserved our plants, our soil, our forests, and our rivers over the centuries. Now you want to take these away, and destroy them. And then you call it development." Saying this, Minati hid her face.

When I coaxed her to explain to me how the adivasis were living in tandem with nature, and how the modern system was distancing them from their traditional cultures and community control over resources, she agreed to first show me some plants that had multiple uses, demonstrating the traditional skills of the community which preserved and used them without pushing them into the oblivion of extinction.

Minati showed me the Siali beans - quite large, dry beans whose seeds are eaten after boiling or roasting. The branches of the plant are used to make ropes, and the leaves are used to make leaf plates. Kusum Koli leaves are used for fodder, while its fruits are eaten raw; the wood is used as firewood, and oil is extracted from the seeds. This oil serves as a mosquito repellent and also treats certain skin diseases.

Even the better known Mahua trees have multiple uses. Leaves are used for fodder, flowers are used to make jaggery, liquor and porridge. Flowers are also consumed and often sold in the market, a kind of a curry is made from the fruits besides being used as fodder, and the seed provides cooking oil after extraction. All these are unfortunately classified as uncultivated plants in agricultural parlance, and therefore do not receive any attention.

Debjeet Sarangi of Living Farms, which organized the Adivasi Food festival, says it is aimed at deepening the communitarian ethos of the adivasi society and the shared knowledge systems. The event will highlight their sustainable way of growing food and its relationship with their ecology – land, plants, animals and forests.

> ...what India needs is not a centralized food security system but a multi-layered decentralized system based on the traditional practices of a particular region. Instead of providing the tribal population with a monthly entitlement of 5 kg of wheat, rice or millets, the focus should be on strengthening the existing food system.

When I asked Sarangi whether this exercise didn't aim at romanticizing the foregone, his response was curt: "That's where we are at fault. These people are in complete harmony with nature. Instead of brushing them aside as uncivilized, we have to learn from them. Whether we like it or not, the future of humanity is hidden in these tribal cultures."

Tribal cuisine

I decided to take a walk to see the range of cooked foods displayed. At the entrance to the event itself participants were served a nutritious welcome drink. Made from ragi millet with a sprinkling of rice grains, the drink was certainly very tasty. Called Mandia jau in the local language, it is actually a ragi gruel. Says Salome Yesudas, "I don't know why people need to drink colas and other kinds of soda when you have such healthy drinks available." Given that the sale of colas is already on a decline, it will be certainly helpful if someone was to promote Mandia jau.

I was initially a little apprehensive of tasting the cooked food displayed. More so, because I am a diabetic. But when Yesudas, a nutritionist from Chennai, explained to me how most of these dishes were based on different kinds of millets, which are the preferred food for people suffering from lifestyle diseases, I couldn't restrain myself from dipping my fingers. The spread contained pancakes made from finger millet, foxtail millet, with a little jaggery; cakes from ragi and sesame, and cooked dishes using sorghum, pearl millet, kodo millet, barnyard millet, red rice - with sprinklings of uncultivated fruits and seeds.

Living Farms is now documenting the food recipes and has prepared a nutrition chart detailing the nutrient composition of uncultivated plants. They have also printed posters in English and Oriya on the vast varieties of foods available for a balanced diet, as well as for summer and winter seasons.

The Adivasi Food Festival at Munda was not the first traditional festival of food that I visited, but what gives me hope and encouragement is the fact that some civil society groups are making organised efforts to bring back the lost traditions, including culinary habits. It also clearly demonstrates that what India needs is not a centralized food security system but a multi-layered decentralized food security system based on the traditional practices of a particular region. Instead of providing the tribal population with a monthly entitlement of 5 kg of wheat/ rice/millets, the focus should be on strengthening the existing food system.

However, this will be only possible when we are able to inculcate a feeling of pride in our traditional systems. The richness of our food culture, which is so intricately linked to the preservation of natural resources, is where it can all begin. I don't know why our agricultural universities don't talk about it; I don't know why our food magazines and TV shows never focus on traditional foods; but I am certainly not surprised that our Planning Commission has no idea about the foods that tribal cultures thrive on.

Devinder Sharma *is a Food and Trade Policy Analyst and Activist. He writes on policy issues concerning sustainable agriculture, biodiversity and intellectual property rights, environment and development, food security and poverty. He is also a member of Bhoomi College's Advisory Panel.*

This article was first published in India Together (www.indiatogether.org) and is republished here with permission.

Dustin Putman *writes with warm praise about Earth, the beautiful documentary made in 2007.*

Earth offers a stunning view of our world from top to bottom, presenting an array of animals and landscapes from all over the planet. The harsh realities of nature are handled delicately, so that the film is family friendly.

Earth has been directed by Alastair Fothergill and Mark Linfield, and James Earl Jones is the narrator.

The most accomplished theatrically-released nature documentary since 2003's "Winged Migration," "Earth" is every bit as majestic and eye-opening as the title infers. That it pretends humans do not exist (save for one passing line of narration by the regal James Earl Jones) hardly matters. As the formative release from Disneynature, a non-fictional branch of Walt Disney Pictures, the film works on multiple levels. As an introduction for young children to the wide, varied animal kingdom and the world's so-called "circle of life," it will delight, educate and, on occasion, frighten. For older audiences, the picture is a stunning visual poem and an often enlightening journey to places and creatures that have never quite been seen this way before.

In bringing "Earth" to fruition, directors Alastair Fothergill and Mark Linfield (BBC's famed "Planet Earth") have traveled across the globe, shaping their footage of wildlife and barely touched landscapes into a cohesive narrative set over the course of a year, from one winter to the next. Bookending the story is a polar bear family in the high Arctic—that of a mother and her two cubs, and a father who has journeyed off on his own to find food. As the ice begins to melt and his stomach stays empty, the sad truth is that he may not be coming back.

Rapturously photographed by cinematographers Richard Brooks Burton, Mike Holding and Andrew Shillabeer, the exquisite images soak up the screen. From the tranquil, virtually untouched solitude of the snow-covered, coniferous tree-filled Boreal Forest, to the aerial ride over and down cascading waterfalls, the vistas on hand are nothing short of extraordinary.

As for the material involving the many animals of the world, they offer some of the funnier, more exciting, and frequently gut-wrenching material of any film released so far. A one-on-one tundra chase between a caribou calf and a hungry wolf, the slightest stumble potentially causing the former to lose its life, is the sort of edge-of-your-seat set-piece that could put to shame any Jason Statham or Bruce Willis action movie. Later fights to the death, such as a pride of lions ganging up on a sole elephant, are impossible to look away from.

The fact that the movie cuts away before these face-offs become graphically violent in no way lessens the impact, because it is obvious what is to happen next. Another sequence where a baby elephant in need of water gets separated from the pack during a dust storm and begins following footprints headed in the opposite direction is unexpectedly poignant.

Lest the film seem to be all gloom and doom, "Earth" mostly retains a light, inviting tone, and James Earl Jones' narration, emulating the Disney documentaries of the 1940s and '50s, is highly entertaining. The goofy mating ritual of the rainforest's Superb Bird of Paradise is a vision this viewer has never seen before, and it is hilarious to behold. A family of baby chicks' first flight as they jump from a tree and plummet to the mound of leaves below them is akin to a slapstick symphony. It's adorable.

Being a Disney-branded feature, "Earth" aims not to tread into too dark territory, but also treats the reality of the world around us with an honest, if tasteful, eye. The results are pretty remarkable, the beauty of nature receiving a familiar, but still enduring and aesthetically deserved, moment in the spotlight.

Dustin Putman *is a film critic from Washington, DC. An alumnus of American University, he majored in Visual Media & Literature. He has published thousands of full length reviews and has been quoted in television, print and magazineson his blog www.dustinputman.com*

One cannot but be in awe, when one contemplates the mysteries of eternity, of life, of the marvelous structure of reality. It is enough if one tries to merely comprehend a little of this mystery each day. Never lose a holy mystery.

Albert Einstein

Uniformity is not nature's way; diversity is nature's way.

Life is self-organised. Self organized systems evolve in diversity. You are not identical to me, because each of us has evolved in freedom. The self-organizing capacity of life is expressed in diversity. Diversity of culture, diversity of humans, diversity of seeds."

Vandana Shiva

The touch of an infinite mystery passes over the trivial and the familiar, making it break out into ineffable music... The trees, the tars, and the blue hills ache with a meaning which can never be uttered in words.

Rabinrdanath Tagore

Photo Courtsey: Gerard Kelleher

Photo: Wikimedia

Asiatic Lion

Gir Wildlife Sanctuary is the only abode of the Asiatic Lion. The lion population has steadily increased here from 180 in 1974 to 411 in 2010.

'The Caus

World on Verge of

A new study showing that hu species extinction to 1,000 times and "should be a clarion call" efforts. The study, published by without drastic action, the sixth habitat loss to invasive species t are contributing to the plummet

International Union for Cons are 47 critically endangered sp threatened as well. Here is a pro

Ramki Sreenivasan/Conservation India

Great Indian Bustard

Only 250 individuals of the Great Indian Bustard were estimated to be alive in 2011. They have been critically endangered due to hunting and loss of habitat.

Flickr cc Karthik R

Gharial

The Gharial, was once abundant and common with an estimated population of 5,000 to 10,000 in the 1940s. Since 1999 a sharp decline in Gharial population has been recorded throughout its entire range, reaching just 182 in2006. The total breeding population of Gharial in the world is now estimated to be less than 200 individuals.

Flickr cc Monica and Tim

Nilgiri Tahr

The Nilgiri Tahr ranged over the open grassland habitat of the Western Ghats montane rain forests in large herds, but hunting and poaching in the nineteenth century reduced their population to as few as 100 animals by the early 20th century. They number about 2000 individuals.

Flickr cc Lip Kee

Wild Water Buffalo

The wild water buffalo has a population less than 4,000. The global population has been estimated at 3,400 individuals, of which 3,100 (91%) live in India, mostly in Assam.

e Is Us':

the Sixth Extinction

man activity has driven current rates of faster than the natural rate is "alarming" to work towards greater conservation y the journal Science, also warns that mass extinction could be imminent. From o climate change to overfishing, humans in biodiversity.

servation of Nature (IUCN) states there pecies in India and hundreds that are file on some of the species...

Photo Courtesy: Tim Williams

Snow Leopard

About 6000 leopards are left in the world with India having between 400-700 in the northern Himalayan Mountain ranges. Vanishing habitat, poaching for illegal trade and the decline of the cats' large mammal prey have also contributed to its endangered status.

Flickr cc zoomed_in

Bactrian Camel

The Bactrian camel which has two humps on its back has dwindled in the wild form to a population estimated at 800. A small number of wild Bactrian camels still roam the Kashmir valley.

Flickr cc Jankie

Baobab Tree

Regarded as the largest succulent plant in the world, the African Baobab tree is steeped in a wealth of mystique, legend and superstition. It is a tree that can provide food, water, shelter and relief from sickness.The Sagole Baobab is recorded as being the biggest tree in South Africa - its trunk can hold up to 2376 gallons of water.

Flickr cc Karthik R

Indian Python

There are only about 1,000 - 10,000 Indian Pythons left in the wild and classified as Near Threatened by IUCN.

Courtesy: François Xavier Pelletier / WWF-Canon

Ganges Dolphin

Once present in tens of thousands of numbers, the Ganges River Dolphin has dwindled abysmally to less than 2000 during the last century owing to direct killing, habitat fragmentation by dams and barrages, indiscriminate fishing and pollution of the rivers.

Photo Courtesy: Francis Prior

The UNUSUAL aspect of Environmental Diversity

Jason Kawall

Diversity provides us with a wide range of objects for various sciences. We enjoy recreational activities in wilderness areas. We might also claim that we should particularly value endangered species due to their rarity. While I believe these to be excellent reasons for valuing environmental diversity, I wish to isolate and show an additional, surprisingly overlooked reason for valuing environmental diversity. I believe a key reason that we value such diversity is that we value the unusual in general.

It is commonplace to call for the protection of environmental diversity. We wish to preserve species of animals, plants, birds, and so on, and the various habitats which support them. A number of compelling reasons have been put forth for valuing such diversity. For example, it has been argued that we should value the preservation of species as we may come to find, at some future point, that certain species can be used in important products. Other species, even if they are not themselves economically valuable, may be of value insofar as they interact with, and support the survival of, economically valuable species. Furthermore, a certain degree of biological diversity is required to help protect us against massive ecological disaster.

Others have argued that we should value environmental diversity as a source of aesthetic values — beautiful species, sublime wildernesses, and so on. Diversity provides us with a wide range of objects for various sciences. We also enjoy recreational activities in wilderness areas — another source of value. Finally, we might claim that we should particularly value endangered species due to their rarity - much as collectors value rare books or recordings.

While I believe these to be excellent reasons for valuing environmental diversity, I wish to isolate and show an additional, surprisingly overlooked reason for valuing environmental diversity. I believe a key reason that we value such diversity is that we value the unusual in general.

Diversity and the Unusual

We can best begin to isolate the value we place on the unusual by considering concrete examples. Consider this brief excerpt from Thoreau's Walden:

One day when I went out to my wood-pile, or rather my pile of stumps, I observed two large ants, the one red, the other much larger, nearly half an inch long, and black, fiercely contending with each other. Having once got hold they never let go, but struggled and wrestled and rolled on the chips incessantly. Looking farther, I was surprised to find that the chips were covered with such combatants, that it was not a duellum,

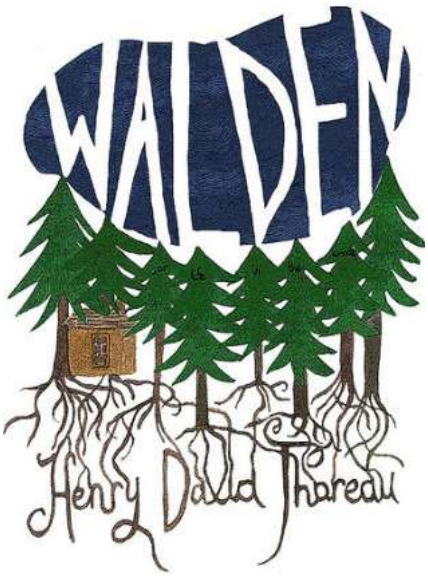
but a bellum, a war between two races of ants, the red always pitted against the black, and frequently two red ones to one black. The legions of these Myrmidons covered all the hills and vales in my woodyard, and the ground was already strewn with the dead and the dying, both red and black. It was the only battle which I have witnessed, the only battle-field I ever trod while the battle was raging.

Thoreau's description of the battle goes on for a number of pages. Clearly, Thoreau is quite fascinated by this battle and is absorbed in observing it. His long description of the scene suggests that he also expects his readers to be intrigued. Consider next the following facts about giraffes, taken from a popular book of "nature facts":

They have bulgy eyes (and use them to see well in all directions), hairy lips, a tongue as long as 18 inches (convenient for curling around leaves), and a 25 pound heart for pumping blood to their extremities. They often eat more than 125 pounds of vegetation every day . When they bend down to get a drink of water, which they can go days without, special valves close to prevent a huge rush of blood to their brains, and their legs spread as if to split.

Clearly, we derive pleasure from experiencing and learning about the natural world. In some cases this is due to a creature or environment being beautiful, in others because it is rare. But frequently our intrigue is simply due to our finding a creature or environment unusual. Ants are not rare, nor are they beautiful, yet they arouse our interest. Giraffes are both rarer and perhaps more beautiful than ants, but our interest seems to be pushed primarily by their unique appearance and unusual features. We are fascinated by the giraffe's long neck and gangly legs, regardless of its beauty (or lack thereof). In preserving natural diversity we preserve unusual species and environments.

Our fascination with the unusual in the natural world is an aspect of our broader interest in the unusual. This interest is reflected in the existence of museums and galleries that frequently display unusual objects, even if they are not beautiful. The Guinness Book of World Records, and various tabloids also reflect this interest, albeit in a less appealing context. The value we place on the unusual in nature is shown by the large number of people who frequent zoos and parks, and the popularity of documentaries and books on living creatures and their unusual means of capturing prey, attracting a mate, and so on.



Thoreau's Walden revels in the fascination of the unusual.

Thus, we do value the unusual and the unique — both the manmade and the natural. Still, we may ask whether or not this is a value we should have. After all, there have been cultures which have valued such things as racial purity or the institution of slavery. Clearly, the mere fact that we value something is not sufficient to answer the normative question of whether a given value is appropriate.

Should We Value The Unusual?

Perhaps valuing the unusual is 'shallow', and thus not desirable. We can imagine a time not long ago when people would crowd to see so-called 'freakshows'. They went to see the unusual, but this seems a dubious thing to value. It seems that valuing the unusual may simply be a matter of pointing and gawking at things with which we are not familiar.

In response, we should consider a specific example. There are people who have only a shallow appreciation of music or other arts. Perhaps they only listen to maudlin melodies or the latest hit singles. They may appreciate the beauty of the music to some extent, but their appreciation seems quite shallow. On the other hand, there will be listeners who become knowledgeable about music and composers, can identify various compositional structures, modalities, and so on. Their appreciation of music will likely be much richer and admirable.

I believe a similar range of possibilities exists when we consider the appreciation of the unusual. At its shallowest, it may involve nothing more than a simple-minded gawking at something an individual does not understand. But we can move beyond this, just as we move beyond shallow aesthetic appreciation. In its more refined forms, our appreciation of the unusual creates a sense of wonder and fascination within us. We come to desire an understanding of what is presented to us. We may develop something of a love for certain unusual objects. Thoreau's absorption in the ants' battle is hardly shallow.

We derive pleasure from witnessing the unusual. We are often inspired to learn about the objects of our fascination. The unusual gives us stories and information we can share with others. When we are entranced by the unusual in nature we gain a respect for nature and its workings.

Our valuing of the unusual provides important additional grounds for valuing environmental diversity. It supports our intuition that we should value many species that are not aesthetically valuable. It grounds our intuition that we should value species with unusual characteristics even if they are not endangered. On the other hand, it also captures the intuition that we should value species which are rare in terms of population. We value the unusual and we should value the unusual; recognition of this is a crucial step in coming to understand the full value of environmental diversity.

***Jason Kawall** is Associate Professor of Philosophy at Colgate University. His primary research interests lie in virtue and ideal observer theories, and their applications to ethics, epistemology, and environmental ethics. He has published papers on these topics in such journals as American Philosophical Quarterly, Erkenntnis, Philosophical Studies, and Ratio.*

The Place of Food in Our Lives

This series of four short articles spell out the importance of localisation of Food in the context of the United States. They are equally, if not more important for us in India.

Courtesy: Nidhi Aggarwal

How should we relate to our food?

Since civilization began, food and farming have told a story of our society, our values, and our relationship to the Earth. Today, we are witnessing unprecedented impacts as a result of food being seen primarily as a commodity. In contrast, a local food system that values sustainability and balance has the potential to reconnect us to each other and to the land. This helps shift our focus to understanding food as an integral part of community and family life.

Food For Community:

Food is a basic human need and right. It keeps our bodies going and it is also the common thread that brings together families and friends and shapes our traditions and cultural identity.

Farming connects people to the land. It can provide meaningful work for many and is the foundation for many rural economies and communities. Diversified family farms tend to be small enough that the farmer has an intimate knowledge of the land. Farms that produce a variety of crops provide benefits including improved farm profitability, water quality, fish health, and carbon sequestration, and decreased greenhouse gas emissions and soil erosion.

The market is where people purchase food, learn about its origin, interact with community members and meet the farmers who grow their food. In the ten years leading up to 2004, the number of farmers' markets in the U.S. more than doubled, adding almost 2,000 new markets.

Labour in a local food system can be meaningful and fulfilling. There are strong relationships between producers and consumers and a greater proportion of people running their own businesses. Young people are eager to work on sustainable farms, at farmers' markets, and in local food businesses.

Food Miles: In the local food system, the average meal travels 45 miles.

Eating is an act of communion with the Earth. Preparing and eating food rejuvenates our spirits and nourishes our bodies.

Communities participate in making decisions about their food supply.

Food As Commodity:

Food is a commodity. It is typically produced in large-scale monocultures and processed and distributed by large food manufacturers. The food industry exists primarily to generate profit.

Farming that takes place on a large scale functions more like factory operations than like farms.

The annual toll of conventional farming includes $12 billion in environmental and health costs from pesticides, fishery deterioration and aquatic "dead zones" caused by chemical fertilizers and manure, and $45 billion for environmental and human health care caused by soil erosion.

The market is a means through which food is sold, traded, and distributed in large supermarkets.

In the United States, the 5 biggest supermarket companies are responsible for almost half of all retail food sales.

Labour in an industrial food system often means laboring on an assembly line. Jobs in industrial food production and processing can be dangerous and are often considered to be work that Americans aren't willing to do. Industrial farmworkers suffer a range of work-related health problems connected to chemicl exposure.

Food Miles: In the conventional food system, the average meal travels 1,500 miles.

Eating is largely an unconscious act aimed at refueling our bodies. It must be quick and convenient, sometimes at the expense of ned utrition and flavor.

Large corporations control the food supply at the expense of communities.

Shaping Our Local Food Systems

The broad movement to decentralize food and agriculture into locally owned and operated enterprises is gaining momentum. Many individuals, businesses, and organizations are working to guarantee an accessible and affordable supply of healthy, fresh food from regional sources. Local control of food and agriculture helps farmers stay in business and strengthens local economies by keeping more money circulating locally. It also reduces the ecological impact of industrial- scale food production and distribution.

What does it mean to shape local policies about our food?

Communities and their elected representatives can make choices that protect the health, safety, and welfare of their citizens. Local control of food allows communities to participate in making decisions about their food supply. Urban and rural communities have a better ability to make sure that food production, distribution, and marketing are carried out in ways that are healthy for the local economy and the environment. Strong local influence over food and agriculture ensures that relevant policies are determined by public interest, not corporate profits. To meet the unique needs of a community, local jurisdictions should have unique standards differing from state or federal laws.

Why should food be controlled locally?

The local control of our food supply helps secure the health and welfare of communities. Local authority strengthens democracy and gives citizens a more direct stake in a healthy future. Local control of our food improves:

- **Health:** With greater local control, we are able to build food systems that improve community health. We can select foods and ingredients based on the qualities of flavor, freshness, and nourishment instead of factors favoring short-term shareholder profits.
- **Food security:** When communities manage their food systems, they are better able to create a healthy, affordable, and stable food supply. In this way, the needs of marginalized segments of the community are met. Conversely, large food manufacturers and retailers inadvertently yet systemically compromise community food security. For example, they encourage: (a) global-scale food distribution systems that are subject to disruption; (b) large-scale, chemical-intensive, monocultural production; and (c) store closures in low income communities where profits are not as high.
- **Local economies:** Local control makes it easier to create an economic environment that fosters locally owned and operated food and agricultural businesses. This keeps more money cycling in the local economy. When stores source food and other products locally, even more money is returned to the local community.
- **Environment:** Food that is locally produced and sold typically comes from small and mid-scale, sustainable farms. Creating stronger ties between communities and their local food systems fosters a connection to the land and better protects nature. One of the biggest benefits is a significant reduction in long-distance transport, a leading consumer of fossil fuels and contributor to climate change.
- **Community cohesion and civic engagement:** Local food systems build community and develop regional identity and character. They provide more meaningful livelihoods for food and agriculture workers, encourage community interaction, and build respectful relationships.

Photo Courtesy: Barry and PK

Local Food Systems: Challenges and Threats

When food is locally controlled,communities and their elected officials are empowered to make decisions about their food supply. Local control of our food is being systematically undermined through changing policy and market structure.

When food is locally controlled, communities and their elected officials are empowered to make decisions about their food supply. Local control of our food is being systematically undermined through changing policy and market structure. As a result, food systems are seldom shaped in the public interest and instead act to maximize profits for a handful of powerful corporations. This shift is threatening community food security, local economies, and food quality, along with human and environmental health.

How is the local control of food being threatened?

- **Consolidated corporate power:** A few large corporations are gaining immense wealth and control in the food economy, acquiring disproportionate political power and leverage. For example, by 2004, the top ten food retailers controlled 25% of the worldwide industry. The top ten seed companies controlled half of all seeds worldwide. Local independent food and agriculture businesses have either been bought out or forced to close because they cannot compete with their large multinational competitors.

- **Economic subsidies and incentives that favor big business.** Lobbyists representing large food companies pressure policymakers to structure farm subsidies and other public funding programs in their favor. In addition, there are many indirect subsidies that favor large agribusiness at the expense of local food economies. Publicly funded research programs, physical infrastructure such as roads and ports, tax breaks, and grants support global food systems, with little assistance for local, sustainable alternatives.

- **Pre-emption.** Federal and state governments, pressed by the agribusiness industry, are actively removing local authority over food. The intent of the introduced legislation is to weaken protective health, safety, and environmental measures. These laws prevent local governments from passing policies, ordinances, or initiatives that regulate seeds and plants - including those that are genetically modified.

- **Free trade.** Free trade treaties are another form of pre-emption. Legally binding international trade agreements can remove a country›s ability to restrict food imports for health, safety, or environmental reasons. Most trade treaties, including World Trade Organization agreements and the North American Free Trade Agreement, allow one country to sue another if its trade restrictions impact corporate profits. Trade agreements have the potential to take precedence over local, and even national, control of food, agriculture, and other areas of the economy.

- **Health, safety, and environmental standards.** Regulations concerning health, safety, and environmental standards are intended to make sure that food production and handling practices do not harm human health or the environment. However, they are also being used by big business to shape policy in its favor and burden smaller businesses. For example, standards designed for industrial-scale food processing and handling are applied at all scales, including small community-based operations that in many cases cannot afford to - nor need to - meet industrial standards.

- **Disinformation.** Large corporate food interests spend millions to defeat local ordinances that limit corporate control. Advertising campaigns promoting large retailers and agribusinesses as good community citizens mask the detrimental economic and social effects of their presence in local communities. For example, leading food retailer Wal-Mart says: “We believe that being a member of the community is a privilege and that we are accountable to help sustain the communities that rely on us.” Yet the company has gained notoriety for siphoning tax dollars and having poor labor practices and business practices that undermine the local economy. Marketing campaigns portray the global scale food system as the key to economic prosperity. In fact, strong local economies bring much bigger economic returns to local communities by keeping more money circulating locally.

Local Food Systems: Getting Involved

We can make a significant difference simply by purchasing food directly from local producers and processors instead of multinational companies. We can encourage restaurants and grocery stores to buy locally and directly from farmers by asking for local products, and help build direct links between farmers and the rest of the community through Community Supported Agriculture (CSA).

Photo Courtesy: Ajay Tallam

Each of us can be a meaningful part of restoring and strengthening our local food systems through the many roles we play:

As Citizens

Let us re-empower ourselves as citizens in our communities! Strong local policies can address shortcomings in state and federal policies, which often do not take into account the unique conditions of local areas. Steps toward local participation include:

- working to elect people who champion sustainable local agriculture,
- getting to know our city council members and local county supervisors,
- encouraging the integration of local foods and their distribution into city planning, and
- starting local food policy councils.

As Consumers

We can make a significant difference simply by purchasing food directly from local producers and processors instead of multinational companies. We can encourage restaurants and grocery stores to buy locally and directly from farmers by asking for local products, and help build direct links between farmers and the rest of the community through Community Supported Agriculture (CSA) and other buying club initiatives.

As Entrepreneurs

There are many ways to help foster our local food economies. We could start a farmers' market, help a local farm establish a Community Supported Agriculture (CSA) program, develop local processing facilities, start a community kitchen, or invest in our local food economy.

As Community Organizers

Strong communities facilitate the local control of food. Help revitalize the web of community life by forming alliances and pooling of resources, reviving local community centers and granges, organizing neighborhood events such as local food meals, supplying educational slideshows or posters, or simply starting conversations about local food with friends and neighbors.

As Artists

Food is a central element of culture and can bring incredible joy to our lives. When we prepare a beautiful meal, it can inspire and heal our spirits as well as our bodies. A landscape of locally grown food also has an aesthetic dimension that conveys real beauty and vibrancy. Exploring the art of food is a great way to appeal to and engage people in their local food system.

As Philosophers

Rethinking our own actions and how they fit into the bigger picture can help us live more in line with our values. Asking questions is effective in planting the seed of awareness. Asking store owners, restaurants, and grocery produce managers where their food comes from can build awareness of, and support for, local food in subtle and powerful ways.

The broad movement to decentralize food and agriculture into locally owned and operated enterprises is gaining momentum. Many individuals, businesses, and organizations are working to guarantee an accessible and affordable supply of healthy, fresh food from regional sources. Local control of food and agriculture helps farmers stay in business and strengthens local economies by keeping more money circulating locally. It also reduces the ecological impact of industrial- scale food production and distribution.

To strengthen the movement for local control, alternative policy frameworks and food system models are necessary. In addition to these positive structures, it is important to counter the many threats to local food systems, such as further industry consolidation and policies written to favor global agribusiness.

The Importance of Microbial Diversity *in our Body*

Dr. Mercola

Creative Commons

Nearly 100 trillion bacteria, fungi, viruses, and other microorganisms compose your body's microflora, and advancing science has made it quite clear that these organisms play a major role in your health, both mental and physical.

Your gastrointestinal tract is now considered one of the most complex microbial ecosystems on Earth. You may have a basic awareness that the microbes in your gut affect your digestion. But their influence extends far beyond that to your brain, heart, skin, mood, weight… and the list goes on and on.

Nearly 100 trillion bacteria, fungi, viruses, and other microorganisms compose your body's microflora, and advancing science has made it quite clear that these organisms play a major role in your health, both mental and physical.

By now most people know that our bacteria outnumber our cells 10-1, but it gets even more complex, as in addition to the bacteria there are viruses. The most common ones are bacteriophages and, get this, they actually outnumber the bacteria 10-1. That means you have about one quadrillion of these viruses in your gut.

All these intestinal microflora are part of your immune system and about 80 percent of it originates in your gut. Researchers have discovered that microbes of all kinds play instrumental roles in the functioning of your body. For example, beneficial bacteria, also known as probiotics, have been shown to:

- *Counteract inflammation and control the growth of disease-causing bacteria*
- *Produce vitamins, absorb minerals, and eliminate toxins*
- *Control asthma and reduce risk of allergies*
- *Benefit your mood and mental health*
- *Normalize your weight*

For all of these reasons, and more, I recommend a diet rich in whole, unprocessed foods along with cultured or fermented foods. If, for whatever reason you are not consuming fermented foods at least a few times a week, it's wise to consider supplementation.

A high-quality probiotic supplement can be a helpful ally to restore healthful balance to your microbiota—especially when taking antibiotics, and/or when eating processed foods, as both of these tend to decimate the colonies of friendly bacteria in your gut.

DNA Sequencing Adds to Knowledge Base About Stomach Bacteria's Role in Health

Your gut flora can be divided into the following four categories:

- *Prokaryotes (bacteria and archaea)*
- *Bacteriophages (viruses that infect prokaryotes)*
- *Eukaryotic viruses (infectious agents that replicate inside living cells)*
- *Meiofauna (primarily fungi and protozoa)*

According to Professor Wu, fungi and bacteria tend to be in competition with each other. When you decrease the fungal diversity in your gut, healthy bacterial colonization increases and vice versa. An example of this is when you develop a Candida infection following a round of antibiotics. When the antibiotics kill off healthy bacteria, the fungi are allowed to proliferate.

Through modern DNA sequencing techniques, researchers have also realized that the meiofauna in your gut can either be helpful or harmful, depending on the type of fungi or protozoa in question. Helminths and blastocystis, two types of parasites, appear to serve protective roles by suppressing inflammation in your gut, while others contribute to gastrointestinal diseases.

Even 'Bad' Microorganisms Play a Role in Maintaining Health

Research is now showing us that the complex interactions of all of these microorganisms, both bacterial and non-bacterial, can quite literally make or break your health.

The beneficial nature of this symbiotic relationship extends beyond so-called "friendly" bacteria. Even microorganisms you'd typically consider "bad" or pathogenic can play an integral role in the maintenance of health and disease prevention.

Stomach Microbes and Cancer

Another article highlighting the importance of microbial diversity and balance was recently published by Institute of Science for Society,5 in which Dr. Eva Sirinathsinghji discusses how your microbiota influences your cancer susceptibility. She also notes the influence of your gut flora on organs such as your skin, lungs, breasts, and liver.

Gut microorganisms even appear to impact the efficacy of various cancer treatments. For example, she cites a Science study in which mice that received antibiotics three weeks before tumor inoculation did not respond well to the tumor immunotherapy given. Mice bred to not have gut microbes also responded poorly to the treatment.

Even more importantly, cancer therapies that do not work by activating your body's immune response will not work unless you have the appropriate gut microbes! Such therapies, which include certain chemotherapy agents, actually rely on gut microbes to eradicate the tumor... Gut microbiota is known to affect inflammation and metabolism, both of which are hallmarks of cancer. But DNA sequencing techniques have done much to further our understanding here as well.

The Microbe-Obesity Connection

Recent research suggests that your diet alone can dramatically alter your microbial balance. According to Jeffrey Gordon, director of the Center for Genome Sciences and Systems Biology at Washington University in St. Louis,8 a diet high in saturated fat, and low in fruitsand vegetables allows microbes that promote obesity to overtake colonies of microbes that promote leanness.

"Eating a healthy diet encourages microbes associated with leanness to quickly become incorporated into the gut," he says.

Speaking of obesity and gut bacteria, it's important to remember that when you take an antibiotic, or regularly consume foods contaminated with antibiotics, you decimate the beneficial bacteria in your GI tract. This may have a notable impact on your weight and metabolism. As noted in a recent article by Eco Child's Play,9 which discusses the antibiotic-gut microbe-obesity connection:

"Looking at how poultry is fattened up with antibiotics when it is young, a very logical hypothesis is drawn that early antibiotic use in children could have the same effect."

How Gut Bacteria 'Guide' Your Mind

The last health aspect I'll tie in here is the connection between your gut health and your mental health. This connection appears to be so strong that some propose probiotics may be the new Prozac.

According to an article published the June 2013 issue of Biological Psychiatry,10 the authors suggest that even severe and chronic mental health problems, including post-traumatic stress disorder (PTSD), might be eliminated through the use of certain probiotics.

Two strains shown to have a calming influence, in part by dampening stress hormones, are Lactobacillus helveticus and Bifidobacteriumlongum.

Others may have similar effects, although more research is needed to identify them.

Optimizing Your Stomach's Flora May Be One of Your Most Important Disease Prevention Strategies

All of this information should really drive home the point that optimizing your stomach flora is of critical importance for disease prevention, including cancer prevention. Reseeding your gut with beneficial bacteria is essential for maintaining proper balance here. As mentioned, beneficial bacteria help keep pathogenic microbes and fungi in check; preventing them from taking over. In light of this, here are my recommendations for optimizing your gut bacteria.

- Fermented foods are the best route to optimal digestive health, as long as you eat the traditionally made, unpasteurized versions. Healthy choices include lassi (an Indian yoghurt drink, traditionally enjoyed before dinner), fermented grass-fed organic milk such as kefir, various pickled fermentations of cabbage, turnips, eggplant, cucumbers, onions, squash, and carrots, and natto (fermented soy).
- Fermented vegetables are an excellent way to supply beneficial bacteria back into our gut. And, unlike some other fermented foods, they tend to be palatable, if not downright delicious, to most people. As an added bonus, they can also a great source of vitamin K2 if you ferment your own using the proper starter culture. Most high-quality probiotics supplements will only supply you with a fraction of the beneficial bacteria found in such homemade fermented veggies, so it's your most economical route to optimal gut health as well.

Dr. Mercola finished his family practice residency in 1985 but was trained by the conventional model. In his first years of private practice, he treated many symptoms with prescription drugs and was actually a paid speaker for the drug companies. But as he began to experience the failures of this model in his practice, he embraced natural medicine and has had an opportunity over the last thirty years to apply these time tested approaches successfully with thousands of patients in his clinic. 15 years ago he founded Mercola.com to share his experiences with others. He's also written two NY Times bestselling books, and has had frequent appearances on national media including the Dr. Oz show and major news channels.

For more helpful articles, please visit Mercola.com.

There is nothing like a dash of hot and peppy dry garlic chutney or roasted gram or peanut chutney to liven up a simple meal of dal and sabzi. What's more, once prepared, dry chutneys can be stored at room temperature for a month or more to be dished out as and when needed.

A touch of powder

Dry powder chutneys are one of the characteristic features of Maharashtrian cuisine. There is nothing like a dash of hot and peppy dry garlic chutney or roasted gram or peanut chutney to liven up a simple meal of dal and sabzi. What's more, once prepared, dry chutneys can be stored at room temperature for a month or more, to be dished out as and when needed. Convenient, right?

Usually, these mouth-burning assortments are associated with taste, not health, and those overly fond of dry chutneys get gently teased about what the veritable firecrackers are doing to their insides. But some chutneys prepared from oilseeds, for instance jawas (linseed or flaxseed), khurasni (niger) and kala til (black sesame), have far-reaching health benefits.

Unfortunately, with changing agricultural practices and food habits, these oilseeds are disappearing, especially from the rural platter where they used to be integral parts of the meal either in the form of cooking oil or dry chutney. Before the advent of commercial agriculture in Maharashtra, linseed and black sesame were grown across the state as part of both rabi and kharif crops. Niger was confined to eastern Vidarbha and the Sahyadris in western Maharashtra. All three were cultivated mainly for their oil. But with growing popularity of groundnut and soybean oils as cooking oils, the acreage of linseed has reduced drastically. Black sesame has been replaced with the commercially valuable but less nutritious white variety, while niger is now grown by the tribals of Vidarbha and Sahyadris in small quantities.

Traditionally, all the three seeds are considered good for enhancing strength and preventing illnesses. Health benefits of linseed and black sesame are well documented. Linseed is rich in Omega 3 fatty acids, fibre, high amounts of plant estrogen and anti-oxidants, apart from several B-complex group of vitamins and minerals such as calcium, iron, magnesium and zinc. Modern research has associated linseed with prevention of heart diseases, diabetes, stroke and cancer. Regular consumption of linseed is also known to prevent and cure constipation, indigestion and flatulence.

Black sesame seeds are known to be rich in calcium, magnesium and several trace minerals. They also help lower cholesterol levels in the blood. Its oil is known to prevent premature ageing and graying of hair. The benefits of niger seed are less well documented, but tribal wisdom says their health benefits are similar to those of black sesame seeds. Traditionally, niger oil is used as a massage oil. Its therapeutic properties offer relief in case of aches, pains and skin problems.

Tulsabai Lahange of tribal village Karewadi in Ahmadnagar district, who showed Down To Earth how to make the chutneys, says chutney is an easy way to consume these seeds regularly in small quantities. Another way is to add a spoonful or two of the roasted seed powder to curries. It improves the taste and brings down the oil requirement of any recipe, she adds. Chutney can also be mixed with dough to prepare spicy rotis.

Nandeesh Churchigundi, an organic farmer from Shimoga district in Karnataka, says it was customary in his area to consume a spoonful of linseed and niger chutneys with alternate meals. The combination offers wholesome health benefits. Now, with modern medicine's emphasis on omega 3 fatty acids, people are consuming only linseed, he says.

"Have a spoonful of any chutney with each meal daily for a month,

and you will feel the difference in your health. Your aches and pains will be gone or reduced. You will feel lighter and energetic and your bowel movements will be regular and easy," Lahange declares. However, she warns that city dwellers would do well by reducing the quantity of red chillies in the chutneys.

Jawas chutney

Ingredients

- Linseed: 100 g
- Dry red chilly: six to eight
- Cumin seeds: 2 - 3 tsp
- Salt: to taste

Method

Roast linseeds lightly in a pan. Stop roasting when the seeds start crackling, else they will get burnt. Roast chillies and cumin seeds separately. Let all ingredients cool and then grind them to a coarse powder. Add salt. Store the dry chutney in an air-tight container. Serve with meals.

Note: The above method can be used to make niger and black sesame chutney.

* Dr Johanna Budwig's cancer-busting breakfast

Ingredients :

- Linseed : 2 tbsp
- Cottage cheese : about a cup
- Linseed oil (optional) : 2 tbsp

For sweet mix :

- Jaggery : to taste
- Mixed fruit pieces : half a cup
- Dry fruit bits : 1 tsp

For savory mix :

- Salt : to taste
- Garlic : 1-2 cloves
- Fine chopped salad : half a cup
- Pepper : to taste
- Cilantro or mint, chopped : a pinch, optional

Method:

- Step 1: Blend the cottage cheese and linseed oil together in a blender (you can skip this step if you don't want the oil). Roast linseed and grind to coarse powder. Add to cottage cheese blend and mix well.
- Step 2 : For sweet mix, add jaggery and mix well. Decorate with fruit.
- Step 3 : For savory mix, add salt and crushed garlic and mix. Decorate with salad. Add a pinch of pepper and garnish with cilantro.

* *Dr. Johanna Budwig was a German biochemist and author. Based on her research on fatty acids, she developed a diet that is believed to be useful in the treatment of cancer.*

Aparna Pallavi *works with Down to Earth magazine. Living in Nagpur, she has been documenting tribal food practices and culture for 6 years now. She has worked on the feminine side of the Vidarbha Agrarian crisis on a National Foundation for India fellowship in 2006-07.*

Reprinted from Down to Earth with permission, October, 2013.

Cultivating Biodiversity:
PEASANT WOMEN IN INDIA

P. V. Satheesh

In the Deccan region of India, over 60,000 women peasants are feeding their families, their culture and their pride with biodiverse farming practices. Their knowledge and successes have reached across national and institutional borders, and they have received recognition from around the world.

In the Deccan region of India, over 60,000 women peasants are feeding their families, their culture and their pride with biodiverse farming practices. Their knowledge and successes have reached across national and institutional borders, and they have received recognition from around the world.

It is the year 2003 in Andhra Pradesh, India. A group of more than 50 peasant women were gathered in a thatch roofed hall in Didgi village, engaged in a video interface with a group of senior agricultural scientists.

Sammamma, who owns three acres of rainfed farmland and grows more than 18 varieties of crops, stood up and started explaining why she values biodiversity in her farming practices. Quickly a scientist on the other side of the video camera stopped her and said *"No, no, please do not worry about biodiversity. It is we, the scientists, who should think of biodiversity, and we will recommend a seed for you to use."*

Scientists srill believe too often that agricultural science and knowledge are exclusively their domain, while peasant farmers, especially the women, are not to be included at all when discussing farming approaches. However, the women in the Deccan region have proved them wrong in so many ways.

BIODIVERSE FARMING SYSTEMS

The women of the Deccan region are the seed-keepers, treasuring seeds more than money.

The peasant women in Didgi village have developed highly biodiverse farming systems with common characteristics: they all farm on non-irrigated, not very fertile, fields of less than two acres; they are all non-chemical farmers; they all grow 12-23 varieties of crops on their small plots; and none of them need to purchase any of their food from markets.

The women of the Deccan region are the seed-keepers. They not only conserve seeds, but also decide on the mix and quantity of seeds to be planted at planting time. This is a win-win system: the women's way of farming supports biodiversity, and biodiversity supports their way of farming.

Why is biodiversity so important for these women? Why are they not content with growing just one or two commercial crops as advised by the Department of Agriculture? They have a clear preference for food crops such as Yellow Sorghum, which are totally discarded and discouraged by agricultural scientists as it only attracts a low price on the market. For dalit women Yellow Sorghum provides nutritious food and good fodder. It grows in dry soil, can be used in fencing and thatching and has many other qualities. All these factors, in addition, can be completely controlled by the women in spite of their low income levels. The reverence that peasant women show for such "orphaned crops" illustrates their special vision on food and farming.

RESHAPING FOOD POLICY

In India, a select few species are promoted and supported as food crops by governmental institutions. A wide range of millet varieties, which traditionally have nourished many rural communities, are not among

them. In 2013, for the first time in our history, the government recognised millet varieties as national food security grains by including them in the brand new National Food Security Act. After a decade long struggle by dalit peasant women, the Deccan Development Society and the Millet Network of India, millets are now firmly entrenched in India's public food system. For us and for the women this was a great moment for rejoicing. They used radio and made short films to share their toils and successes. With grit and determination they have overcome their social, economic and gender marginalisation and reshaped national policy. Also, in 2013, as proponents of millet we were able to take the message of millets back to their African birthplace by initiating the Africa-India Millet Network and creating a new solidarity between the two continents.

For women from vulnerable communities, sticking to peasant values and biodiversity in farming can mean the difference between life and death. Whereas farmer suicides have been widespread among Indian farmers who were crippled by debt as a result of their expensive and risky commodity and chemical based farming systems, there has not been a single suicide among peasant women farmers who continue to use low-cost biodiverse farming principles.

Agrobiodiversity is a strong part of these communities' traditions, but it is also the only logical way for them to farm. They clearly understand that a biodiverse system is the best security they have against climate vagaries. Moreover, the crops they grow are indicative of their food culture, and the relationships between foods in the kitchen reflect relationships in the field.

For instance, food made from sorghum is accompanied by food made from pigeon peas, and in the field sorghum and pigeon peas grow as companion crops. This unique "farm-to-kitchen" model is what has kept agrobiodiversity alive on their farms for centuries. Since women are the most important torchbearers of this food tradition, they are also the carriers of the agrobiodiversity tradition.

Biodiverse farms not only nurture physical life, but also moral, ecological and spiritual life. People in this region celebrate biodiversity through several religious festivals where heroes symbolise and bless biodiversity. Englagatte Punnam, for instance, is celebrated when the winter crops mature, by tying diverse crops on the door of every home – as if the farmers are declaring, "look at the diversity in my field!" Women treasure these crops more than monetary wealth. Consequently, seeds are neither bought nor sold, but always exchanged.

The women of the Deccan region are the seed-keepers. They not only conserve seeds, but also decide on the mix and quantity of seeds to be planted at planting time. This is a win-win system: the women's way of farming supports biodiversity, and biodiversity supports their way of farming.

PROUD TO SHARE

The Deccan Development Society (DDS), a grassroots NGO working with peasant women from socially and economically marginalised dalit communities, has facilitated the sharing of farmer knowledge for 25 years.

Women from this region, especially those from lower socio-economic classes, have travelled abroad at least 100 times – from Peru to Cambodia – to share their experience and perspectives on farming with farmers, scientists and policy makers. They have met receptive audiences, both among male and female peasants and in international conference rooms.

In 2003 they addressed the World Organic Congress in Victoria, Canada, where various people in the audience said they felt humbled by the women's experiences.

Brimming with confidence, these women have started celebrating the Mobile Biodiversity Festival. Every year since 1998, they have travelled to over 50 villages during one month, discussing and celebrating ecological agriculture, control over seeds and organic markets in a way that expresses the deep relationships between

Government officers, scientists, civil society activists and media regularly come to the region to look at the women's farms and seeds. Their stories regularly appear in newspapers and on television channels.

Today, the region comprising of about 50,000 hectares of land is about to be recognised as an Agricultural Biodiversity Heritage Site by the Indian National Biodiversity Board – the first in the country.

farmers and soil, agriculture and environment. They have reached over 150,000 farmers in the region, showing them the richness of the traditional seeds and crops from the area.

The Indian government has recognised these Biodiversity Festivals as the most important community cultural campaign on the issue.

WORLDWIDE RECOGNITION

The Deccan peasant women, who were so easily dismissed by the scientists in 2003, are now receiving national and international recognition for their work on biodiversity. Anjamma for instance, a 55-year-old peasant woman who has never gone to school and cannot read and write, is now a member of the expert panel on agrobiodiversity in the state of Andhra Pradesh. Government officers, scientists, civil society activists and media regularly come to the region to look at the women's farms and seeds. Their stories regularly appear in newspapers and on television channels.

Today, the region comprising of about 50,000 hectares of land is about to be recognised as an Agricultural Biodiversity Heritage Site by the Indian National Biodiversity Board – the first in the country. The international Convention on Biological Diversity (CBD) developed the concept to honour sites where biodiversity is practiced. The Heritage label gives the area and its biodiversity the same level of protection as national parks and offers special status, privileges and incentives to the farmers and their communities. The label conveys a strong message that the Indian government supports marginalised family farmers and recognises their contribution to protecting biodiversity. When asked what the Heritage label means to them, the peasant woman Mahbatpur Swaroopa answers, *"We are totally disinterested in any monetary benefits. It is the recognition that we cherish."*

THE POWER OF WOMEN

The attention for their farms and perspectives has added tremendously to the women's self esteem. Paramma, a farmer-seed keeper in Khasimput village, once demonstrated this confidence as she confronted government officials who had come to visit her: *"Every month you get your salaries and fill your pockets with currency notes. But come to my home. I have filled it with seeds. Can you match me?"*

Given their marginalisation in other spheres of life, the women feel that their practice and conservation of agrobiodiversity has bestowed them with a new stature in the country, in their communities and in their homes. Most of the peasant women in this area say that more often than not, they are consulted and play a key role in making choices for their family farm.

Cheelamamidi Laxmamma cultivates her three-acre farm with dozens of food crops along with her husband. When her husband was counselled that he should become progressive and plant some hybrid crops on the land, he first wanted to consult his wife – completely going against the grain of his social culture.When he did, she burst out: "Have you gone mad? Why do we need hybrid seeds and a monoculture? Are we not happy with what we are growing?" And he gave in. Sharp and alert women such as Laxmamma enjoy far more respect from their husbands for the recognition they have gained in the community and beyond.

P.V. Satheesh *is Founding Member of the Deccan Development Society (DDS), and currently General Secretary and Director of the Zaheerabad Project. He is an internationally recognized specialist on development, communication and participation. He is one of country's respected spokespersons on gender and food security, ecological agriculture and genetic engineering, and for his conviction above all, to protect the smallest, most marginalized farmers.*

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Visit www.ddsindia.com

The hundredth farmer

Chicu Lokgariwar

Soban Singh is a farmer in a small village nestled in Garhwal.The fields around his home are all irrigated and bear tomatoes and onions, cauliflower and peas to be sold in the nearby market town of Chamba.All this he's done without recourse to a canal, a tube well, or even a gushing spring.He has identified spots on his farm where the seepage is visible, excavated a shallow basin, and painstakingly led the water into his fields.

In a situation where 99 out of 100 farmers would've been stumped, Soban Singh waters his fields and inspires his fellow farmers using a tiny bit of seepage and a massive amount of perseverance.

I remember a farm pond that I once visited in Maharashtra. It shone like a square sapphire in that dry land, securely held by tall earth embankments. On the other side of one of those embankments was a parched and dying field. When I asked the farmer why it wasn't irrigated, he asked me to give him a pump.

"I can't do that", I said and pointed out that the total lift was only about 4 metres. Surely he could manage something like a human chain for watering, or get his bullocks to raise water? But no, he adamantly said, "Give me a pump".

I wish I could introduce that farmer to Soban Singh.

Soban Singh is a farmer in Chopdiyali, a small village nestled in the Garhwal Himalayas. He exudes a quietly prosperous air and pride in all the vegetables he grows. He has an orchard of peaches and apricots. To this, he has now added walnuts and malta.

The fields around his home are all irrigated and bear tomatoes and onions, cauliflower and peas to be sold in the nearby market town of Chamba. A little lower down are a couple of fields where, in long rows mulched with plastic, he grows capsicum and lettuce for the Delhi market. Each field is bordered by a pretty and lucrative, edge of corriander.

All this he's done without recourse to a canal, a tube well, or even a gushing spring. The 'springs' that he taps would not have even been noticed by ninety nine of a hundred farmers.

Soban is the hundredth farmer.

He has identified spots on his farm where the seepage is visible, excavated a shallow basin, and painstakingly led the water into his fields. It is only recently that Soban has been able to construct two irrigation tanks with funding from HIMCON, an organisation that works towards the industrial development of Himachal Pradesh, and the government.

As Dr. Singh of HIMCON explained to me, "When you see a farmer doing so much on the barest of resources, it is a pleasure to be able to arrange for the little help he needs to make things possible". Of course, Soban did not stay idle till he could build those tanks. He would use a muti-patched length of pipe to carry water to the fields that were within his reach. The others he watered by hand.

Even today, Soban lugs pots of water to his orchard to nourish his saplings. His efforts are quite literally bearing fruit but the hard work doesn't stop. Soban's story, his farm, the massive tanks built to store water from the pitiful seepage and the thrifty use of the overflow from that seepage are an inspiration to other farmers in similar situations.

Chicu Lokgariwar *is a consultant with India Water Portal working in Uttarakhand on environmental flows and studying community-ecosystem interactions in the context of climate change and urbanization. Original article at www.indiawaterportal.org/articles/hundredth-farmer published here under CC 2.5 IN license.*

BIONEERS

From vast stretches of forests and land to tiny seeds and grains, these pioneers have painstakingly laboured for decades to preserve various species or ecosystems in our country. Frogs, cows, tigers, migratory birds, forests and us (eventually) have been the beneficiaries of their efforts.

***Alton Fernandes** and **Shyamala Madhavan** share with us brief introductions to these 'Bioneers'*

Debal Deb

He has preserved over 820 varieties of indigenous rice varieties in his farm in Orissa. A scientist by profession, he has resorted to natural farming that stimulates a bio-diverse environment in agriculture.

Photo Courtesy: Manimugdha Sharma

Jadav Molai Penang

Concerned over snake deaths and reduced numbers of migratory birds and animals visiting areas near his home, Jadav Penang began his planting on the riverside island of Aruna Chapori, on the banks of river Brahmaputra. In 34 years this has grown to a 1360 acre forest that attracts Bengal tigers, rhinos, elephants, deer and a variety of birds.

Ratanlal Maloo

A tradition of feeding birds that led to 15000 demoiselle cranes - migratory birds, landing in Keechan, a village in Rajasthan, every year for the past 40 years. With dedication, Ratanlal ensured a fenced feeding area outside the village and gathered a yearly fund of 85 lakhs to feed 1 lakh kilos of grains to the feathered friends.

Photo Courtesy: Gangadharan Menon

Jason Taylor www.thesourceimage.com

Chandran Master

Dedicated his life to the conservation of indigenous cow varieties whose milk is more superior (medicinal) than cross-bred cows. Concerned about government policies that were harsh on indigenous cow rearing and their rapid disappearance in India, he started collecting various species 30 years back. Currently he has 33 of them belonging to 16 Indian varieties, including some rare ones in his 9 acre farm at Vembaloor, Kerala.

These bioneers inspire a shift to live on Earth in ways that honour the web of life, each other and future generations.

- Amory Lovins

P Dhanesh Kumar

A forest officer who reclaimed 6000 hectares of forest land with his meticulous research and prolonged effort in the Nelliampathy region of Kerala. He fought cases against estate owners who had established themselves on forest land using forged documents.

D V Girish:

Protector of the Badhra-Kudremukh landscape, Girish has successfully kept at bay various commercial interests in the region making it a haven for 20 tigers and other wildlife. He was also instrumental in re-habilitation of 13 villages inside the reserve, to make the reserve area free of grazing, fire-wood cutting and timber extraction.

S D Biju

With 75 percent of Indian amphibian species falling under threatened categories, Biju, dubbed as the "frogman of India", has launched a campaign 'Lost Amphibians of India'. This campaign aims to re-discover species that were believed to be extinct but were noticed 18 to 130 years ago on the field. His extensive work has lead to discovery of new frog species in the Western Ghats and rediscovery of 5 extinct frog species.

D M Mohite

Sustained effort of 15 years in planting indigenous trees and watering them, with community support made the hilly slopes around Devrastra village in Sangli turn green and teeming with wildlife. It was first declared a deer park, then a forest reserve and in 1985, a sanctuary for birds and animals.

Courtesy: Explore Maharashtra

Why I love painting Flowers

Nidhi Aggarwal

Flowers in their mysterious natural presence are "great blessings for humanity". True artists – from creators of ancient Buddhist murals to Islamic pattern-makers, from Renaissance painters to modern artists – have painted flowers not as mere botanical specimens to be scientifically dissected but rather as living symbols of Nature to be enjoyed and celebrated.

When I paint flowers I feel an overwhelming bliss – an excitement to capture the beauty and magic of what I see and feel when I am in their glorious presence. They are my main source of inspiration because I still cannot fully fathom their exquisite beauty. I paint what I see in quick sessions of intense absorption usually lasting just a few hours, without the use of preparatory drawings or sketches. For me, flower painting is the aspect of the relationship between the growing things and the air and sunshine in which it grows.

I am moved and inspired by the work of Van Gogh. His still-life paintings of sunflowers are his most popular paintings of flowers and he was very proud of them. Sunflowers had a special significance for Van Gogh. He made eleven paintings of them. Yellow, for him, represented happiness and the sunflower was a symbol of devotion and loyalty in Dutch literature. Many other artists considered *"no teacher other than Nature".*

Eckhart Tolle put it in a nutshell when he said that we could look upon flowers as the enlightenment of plants.

Relishing and exploring different mediums I'm in the transition state waiting for my paintings to *come to flowering point...*

Nidhi Aggarwal *is a designer by day and an artist by heart. She loves to dream, travel and paint.*

She is proud to be associated with Eternal Bhoomi Magazine where she works as a Design and Layout Artist.

Save Our Sholas!

Coming from passionate conservationists, "Save our Sholas" is a brilliant documentary which attempts at pairing stunning imagery with the message of conservation, says ***Shyamala Madhavan***

In 24 minutes, Shekar Dattatri takes us visually through the enchanting mountains with a powerful narrative from Valmik Thapar that captures the essence of Western Ghats, and through this, the interdependence of life.

Coming from passionate conservationists, "Save our Sholas" is a brilliant attempt at pairing stunning imagery with the message of conservation. It arouses curiosity in the audience and questions the destruction of eco-systems in the name of development and human activities.

The Sahayadris, also known as Western Ghats, are one of the 34 bio-diversity hotspots in the world. It houses multiple endemic species of plants, amphibians and birds, making it an invaluable gem in the earth's landscape. Stretching over 1,60,000 sq km, it spreads from Gujarat in the West of India to Kanyakumari, the southern-most tip on the India map. Its peaks are covered by grasslands and thick evergreen forests known as Sholas.

The mountains are the major source of water for Peninsular India giving life to the three major rivers of Godavari, Cauvery and Krishna. The constant supply is due to the sponge-like capacity of the forests interspersed with the grasslands that form complex water drains that allow water to slowly penetrate into the system. You can see how millions of drops form the ocean – when it rains, the droplets fall on the thick foliage that slows them. They drip slowly from one leaf to another and finally to the ground to form a river. The fact is that our forests get abundant rainfall but we still blame it on the lack of rains for drought. The video clearly illustrates how floods and drought alternate in a region when forests are lost to deforestation.

Life thrives in a forest. A peep into the daily lives in the forest makes the linkages between the species come alive. As they go about their day, the camera shows them having conversations with each-other, snacking, preying, or just relaxing at home with family on the canopy. Insects, big and small, colorful and dull, move on the soil. Termites break down the leaf litter to make them available to trees as organic matter. Trees support birds and monkeys with food and shelter. Birds, in turn, keep insect population in check and also facilitate seed dispersion.

Life is also delicate. Several animals and birds mate for life – one of them is the Great Hornbill. A male hornbill needs to provide food to the female and chicks throughout the roosting period. Any threat to the male, the entire family perishes. Deforestation and rampant exploitation of the natural resources at the peaks drills into the lives of such species. Forest fires and clearance of endemic trees for agriculture make their habitats vulnerable.

The documentary is a demonstration of the Gaia theory that exemplifies earth as one single living entity. When you take care of the environment, you are doing good to yourselves. When you destroy nature, you are destroying yourselves.

Life is resilient and full of hope. Hope that areas such as the Sholas will be protected and be allowed to flourish. Shekar also portrays people's movements that have saved other forested areas from mindless activities such as mining and deforestation. The message is to understand the bounty given to us in the shape of forests, soak in the complexity of the life it supports and prevent them from further misuse.

Shyamala Madhavan *is a nature-enthusiast and a volunteer at Bhoomi. She is on a path to find out how she can reduce her environmental footprint by making sustainable choices everyday.*

Coping with Ecological Anxiety

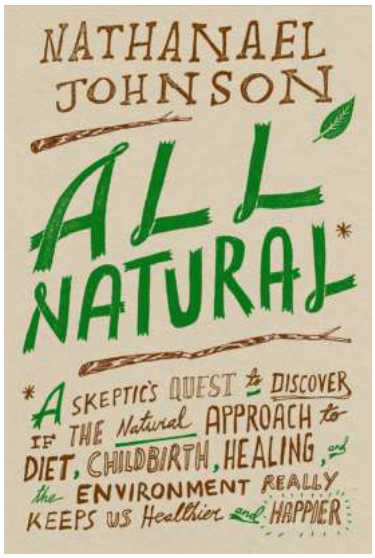
Emma Marris

Title: All Natural

Author: Nathanael Johnson

Published by: Rodale Books, 2013

Chances are good that somewhere in your house - in your fridge or your bathroom, probably - you've got a container with the title of Nathanael Johnson's new book on it: All Natural. It is calming, reassuring, and totally meaningless.



The phrase, 'all natural' has no regulatory definition; companies can slap it onto whatever perfumed synthetic stew they want. And even if it did reliably mean that nothing in the product was cooked up in a lab, "naturalness" tells us very little about safety, effectiveness, or environmental impact.

Philosophers call this phenomenon the "appeal to nature" fallacy, the idea that whatever is "natural" is always good or right. But we don't eat just any mushroom we happen upon in the forest, simply because it is natural. And few among us would prefer to die of an abscessed tooth or appendicitis or childbirth, despite the beating that western medicine takes for being "unnatural." At the same time, many of us are painfully aware that our experiments in "better living through chemistry" have hurt us - and the planet - very badly. Our couches are full of carcinogenic flame retardants; processed foods are contributing to a trend toward obesity in western countries; and manmade plastic swirls in an enormous, guilt-making gyre in the middle of the Pacific Ocean.

Johnson's book deftly captures this quintessentially modern dilemma, which has plunged many first-worlders into a chronic state of "ecological anxiety." In the book, he sets out on a journey to get to the bottom of the polarizing debate. His starting point is very personal. Johnson's parents were northern California hippies who raised their kids on a Paleolithic diet and eschewed even diapers as unnatural. Apparently, they put their babies to sleep on a pad with "a sort of fecal containment lagoon" of cotton rags around their rear ends.

Facing parenthood himself, Johnson begins to question his family's natural mindset and goes on a quest to fact-check the ideology. Raw food? Apparently not the cure-all he once thought it to be. Vaccines? Not as unnatural as you might think, and certainly less risky than skipping them. Home births? Great most of the time, but occasionally it turns out to be really nice to be in the hospital. On births, as in so many of these debates, Johnson looks in vain for a middle way. For his own daughter's birth, he dreams of hiring an outfit that would be called something like "No-nonsense, Evidence-based Midwifery," a place where "hippie midwives and numbers-driven doctors" coexist happily. Instead he finds (as I did) only options for one of two extremes: midwives who are ideologically anti-hospital or hospitals that are a bit too happy with the caesarean scalpel.

Johnson ends up rejecting the credo of his youth - that nature and civilization are always in opposition - and investigates conservation approaches where humans and the rest of nature seem to get along in a mutually beneficial relationship.

Through it all, Johnson forges a new path—one in which he chooses between the modern technological option and the "all natural" option on a case-by-case basis. His trick is to skip the ideology and make decisions on the basis of science, keeping in mind that uncertainty levels, in many cases, are high. What's healthier to drink, raw milk or pasteurized? Should I vaccinate my children? What do the data say? Following the research, Johnson retains - or reembraces - some parts of the natural lifestyle of his youth but rejects others. Many environmentalists and conservationists instinctively trust the "natural" over the artificial in any complex endeavor, from land management to a trip to the grocery store. We were raised that way, or we found a place in nature-oriented communities as adults. But the smarter approach is Johnson's—follow the science.

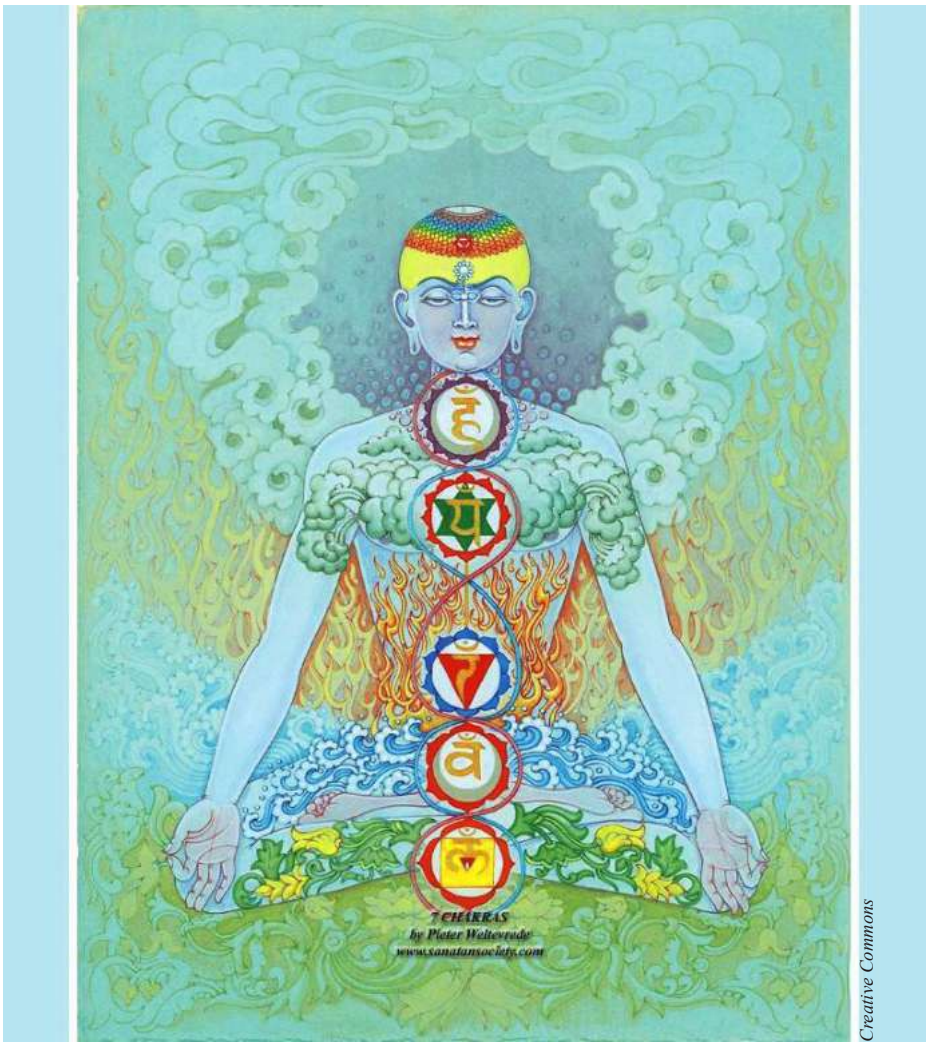
The problem with buying (for an extra $3 a bottle) shampoo with "all natural" stamped on the side is that you are paying for "a world-changing philosophy," not a real value. The same goes for "new and improved"—it is just the techno-optimist version. When facing complicated decisions, we need fewer world-changing philosophies and more common sense informed by empirical evidence. Johnson's personal journey through the book, which he recounts with sparkling humor, begins with him shopping for the best ideology and ends with him trying to operate without any ideology - seeing "the world both ways at once, with both eyes open."

Emma Marris *is an environmental writer and author of Rambunctious Garden: Saving Nature in a Post-Wild World.*

Original article: conservationmagazine.org/2013/03/coping-with-ecological-anxiety

If Only I Could Be Like My Cells...

Dr. Deepak Chopra



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The cells in a body have no problem fully participating in life. A hundred thousand billion of them signed on to the same silent agreement, which can be described through qualities that the most spiritual person would envy — but the most practical person would envy them at the same time. These shared qualities speak eloquently for what a cell agrees not to do as much as for what it does.

What does it mean to live a spiritual life? Who can teach me the core principles of spirituality? Strangely enough my own body can teach me everything I need to know. The cells of my body are already doing what I want to learn. My body does everything better, with more passion and commitment than me. The cells in my body have no problem fully participating in life. A hundred thousand billion of them signed on to the same silent agreement, which can be described through qualities that the most spiritual person would envy — but the most practical person would envy them at the same time. These shared qualities speak eloquently for what a cell agrees not to do as much as for what it does.

Higher Purpose: A cell agrees to work for the welfare of the whole body first and its individual welfare second. If necessary it will die to protect the body —the lifetime of any given cell is a fraction of our own lifetime. Skin cells perish by the thousands every hour, as do immune cells fighting off invading microbes. Selfishness is not an option, even when it comes down to a cell's survival.

Communion: A cell keeps in touch with every other cell. Messenger molecules race everywhere to notify the farthest outposts of any desire or intention, however slight. Withdrawing or refusing to communicate is not an option.

Awareness: Cells adapt from moment to moment. They remain flexible in order to respond to immediate situations. Getting caught up in rigid habits is not an option.

Acceptance: Cells recognize each other as equally important. Every function in the body is interdependent with every other. Going it alone is not an option.

Creativity: Although every cell has a set of unique functions (liver cells, for example, can perform fifty separate functions), these combine in creative ways. A person can digest food never eaten before, think thoughts never thought before, dance in a way never seen before. Clinging to old behavior is not an option.

Being: Cells obey the universal cycle of rest and activity. Although this cycle expresses itself in many

ways such as fluctuating hormone levels, blood pressures and digestive rhythms, the most obvious expression is sleep. Why we need to sleep remains a medical mystery, yet complete dysfunction develops if we don't. In the silence of inactivity the future of the body is incubating. Being obsessively active is not an option.

Efficiency: Cells function with the least expenditure of energy. Typically a cell only stores three seconds of food and oxygen inside the cell wall. It trusts totally on being provided for. Excessive consumption of food, air or water is not an option and neither is hoarding.

Bonding: Due to their common genetic inheritance, cells know that they are fundamentally the same. The fact that liver cells are different from heart cells, and muscle cells different from brain cells does not negate their common identity, which is unchanging. In the laboratory a muscle cell can be genetically transformed into a heart cell by going back to their common source. Cells remain tied to their source no matter how many times they divide. Being an outcast is not an option.

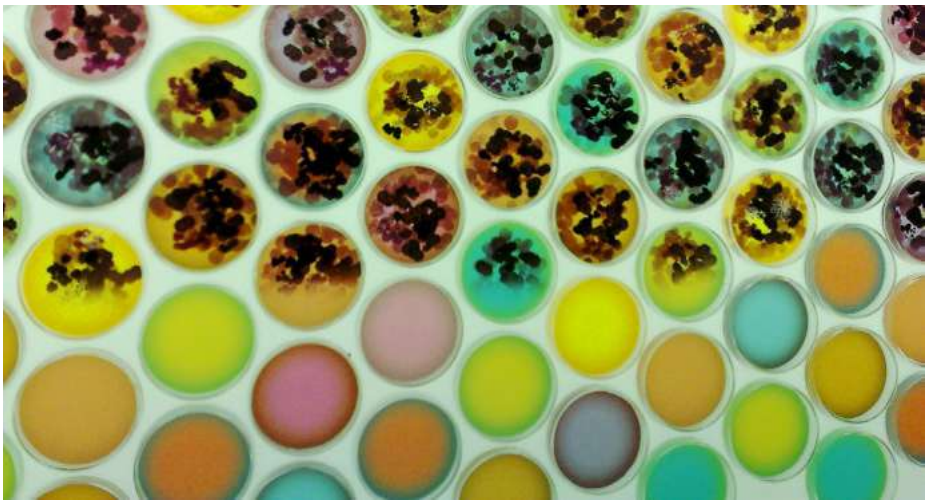
Giving: The primary activity of cells is giving, which maintains the integrity of all other cells. Total commitment to giving makes receiving automatic — it is the other half of a natural cycle. Hoarding is not an option.

Immortality: Cells reproduce in order to pass on their knowledge, experience, and talents, withholding nothing from their offspring. This is a kind of practical immortality, submitting to death on the physical plane but defeating it on the non-physical. The generation gap is not an option.

When I look at what my cells have agreed to, isn't it a spiritual pact in every sense of the word? Other labels work just as well for any of these qualities. The first, higher purpose could be changed to surrender or selflessness. Awareness includes both alertness and adaptability. But my body is unconcerned with labels. To it, these qualities are woven into everyday existence.

The qualities of the cells:

Higher Purpose, Communion, Awareness, Acceptance, Creativity, Being, Efficiency, Bonding, Giving, Immortality.



Flick cc Tony Roberts

The primary activity of cells is giving, which maintains the integrity of all other cells. Total commitment to giving makes receiving automatic — it is the other half of a natural cycle.

They are the result of life's inner intelligence evolving over billions of years as biology. If you examine the structure of a single cell, nothing like surrender, awareness, or communion would be evident. These qualities aren't present in single-celled organisms like bacteria, yeasts and amoeba . The mystery of life was patient and careful in allowing its full potential to emerge. Single-celled creatures continue to thrive — thousands live in your intestines, which could not digest food without them. Evolution moves forward, but it remembers where it has been and nothing is lost.

Even now the silent agreement that holds my body together feels like a secret, because to all appearances it doesn't exist. More than two hundred and fifty types of cells go about their daily business — the fifty functions that a liver cell performs are totally unique, not overlapping with the tasks of muscle, kidney, heart or brain cells — yet it would be catastrophic if even one function were compromised. As it divides into billions of progeny, the first fertilized cell in my mother's womb kept its link to the source. At the level of memory, I still am that first cell. If I possess a soul, anything I could possibly know about it was told to my body first.

The mystery of life has found a way to express itself through me. In fact that's my purpose for being here. Am I fulfilling that purpose? If you read over the list again and take note of everything marked "not an option," you confront a stark fact: The very behavior that would kill our bodies in a day hasn't been renounced by us as people. We are selfish and greedy. We refuse to cooperate; we behave as though there is no higher purpose more important than the demands of I, me, and mine. In our fragmentation and confusion we've been ignoring the very model of a perfect spiritual life inside ourselves.

As they evolved, cells learned what really works for survival. Your body can't afford to pay lip service to leading a spiritual life unless it wants to throw away eons of wisdom. Yet the vast majority of suffering in our personal lives comes about because we consciously choose to behave contrary to the soul bargain that keeps our bodies alive.

Deepak Chopra is an Indian-American author, holistic health/New Age guru and alternative medicine practitioner.

In 1996, Chopra and neurologist David Simon founded the Chopra Center for Wellbeing. He has written more than 50 books and they have been translated into 35 languages.

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NAVDANYA

Earth University / Bija Vidyapeeth Courses 2014

A-Z of Agroecology and Organic Food Systems — September 1st - 30th, 2014

Faculty: Dr. Vandana Shiva, Dr. Ignacio Chapella*, Dr. Miguel Altieri*, Dr. Salvatore Ceccarelli, Dr. A.V. Singh, Sandor Katz, Dr. Anna Powar, Chris Kennedy and Marilyn McHugh, and the Navdanya Team

This 4 week course addresses the physical, intellectual, and holistic aspects of agroecology and organic food systems. Participants will be guided by carefully planned and dedicated instructors, both farmers and scientists. The course will be 50% scientific principles and 50% hands on practical experience. The course will help facilitate a paradigm shift to understand Living Soil, Living Seed, and Living Food. From Panchagavya and the harvest, to the politics and science of chemical-free farming, students will leave the course with a comprehensive understanding of how to role model and create, through hands, head, and heart, agroecological and organic farming methods around the world. Students will return home equipped in the methods of Navdanya organic farming and the skills necessary to create sustainable and just food systems.

Gandhi, Globalisation and Earth Democracy — November 21st - 30th, 2014

Faculty: Sri Satish Kumar, Venerable Samdhong Rimpoche*, Dr. Madhu Suri Prakash and Dr. Vandana Shiva, Arun Gandhi

We live in the midst of multiple crises – ecological, economic, social, political. The current economic model has pushed most ecosystems to the verge of collapse. Species are disappearing, and climate catastrophe is overtaking people's lives from the Himalaya to the Rockies, from the Bay of Bengal to the Philippines.

Not only are ecosystems collapsing, economies are collapsing. We are at a turning point of a crisis. A crisis is also an opportunity and during this course we will discuss how this crisis can be turned into an opportunity. The course is not only about information and knowledge but also complimented with experience, by being on the Navdanya Biodiversity Conservation Farm and participating by doing.

Globalization has also led to the unprecedented concentration of power in the hands of a few global corporations. The course explores the relevance of the four Gandhian principles of swaraj (self-governance), swadeshi (locally production), sarvodaya (wellbeing of all) and satyagraha (non-violent civil disobedience based on the force of truth) to create and defend people's economic and political freedom.

Navdanya/Research Foundation for Science Technology & Ecology
A-60 Hauz Khas, New Delhi 110016 INDIA
www.navdanya.org

MILLETS IN YOUR DAILY MEALS

On 12th July, 2014 at Bhoomi Campus
Timings: 8:30 am - 5:00 pm

Sharavathi Valley Adventure

September 6 - 7, October 4 - 5, 2014

Kindle the adventurer in you!

Explore and experience Western Ghats, one of the Bio-diversity hotspots of the world. Court the Sharavathi river and enjoy some breathtaking views!

Cherish the pristine Ghats, forests and the river through this adventure.

Trek through the Sharavathi Valley along beautiful routes by the river with fantastic views of hills and meadows.

Visit Gudlugundi and Dabbe Falls - Exhilirating waterfalls tucked away in the dense forests of Western Ghats. Truly magnificent.

Water Activities - River rafting and swimming in the vast backwaters of Sharavathi. These activities will help you gain confidence and build trust within a team.

Connect with fellow adventurers and enjoy a sense of togetherness in the beautiful environs!

Feel a sense of oneness with Mother Nature.

"What we enjoy we love, what we love we care for."

The Bhoomi College

Phone: 080 28441173 / 094498 53834

For registration: bhoomi.programmes@gmail.com

EternalBhoomi

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Editor:
Seetha Ananthasivan

Editorial Team
Adil Basha
Rema Kumar
K.G. Parvathi
A. Santhi Lakshmy
Preetha Ramesh
Shyamala and Alton

Production Support:
Ananth Somaiah

Design & Layout Artist:
Nidhi Aggarwal

Design Consultants:
Chinmay Dholakia

Research Assistants:
Preethi Narayanan

Marketing and Distribution
Mangala Tata

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bhoomi.magazine@gmail.com

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Carmelaram Post
Off Sarjapura Rd, Bangalore – 560 035
Ph: 080 28441173
bhoomi.magazine@gmail.com

Editor: **Seetha Ananthasivan**

The Bhoomi College

- a participative space for deep, holistic, and practical learning

Calendar of Short Programmes at Bhoomi College June - October 2014:

- July 12 — Millets in your Daily Meals (A. Santhilakshmy)
- July 26 - 27 — Holistic Nutrition and Conscious Kitchen (Seetha, Santhi and Pushpa)
- August 2 — Reversal of Osteoporosis (Dr. Nandita Shah)
- August 9 — Backyard Know-how - Home Composting (Clean Green Workshop)
- August 15 - 20 — Inner and Outer Ecology (Seetha, Rema, Santhi and others)
- September 6 - 7 — Rainforest Adventure at Sharavathy Valley (Ananth and Nayan)
- September 1 - October 8 — Eco-friendly Food and Farming
- October 2 — Bhoomi Utsav
- October 4 - 5 — Wilderness Learning in Sharavathi (Ananth and Nayan)

Welcome to

Bhoomi Utsav

Celebrate the earth...

Celebrate Earth. Celebrate Life.
Celebrate food and growers of food.
Celebrate the simple and the complex.

Be a part of this mela. Interact with farmers, craftspeople and eco-pioneers. Enjoy local food and music.

Bhoomi College offers:

Explorations in Inner and Outer Ecology

Dates: 15th August - 20th August, 2014

Venue: Bhoomi Campus, Bangalore

About this time and Space

This 6 day programme invites you to a journey of transformation which will lead you to reconnect with yourself, others and the Earth. We believe that learning from living and sharing in small groups can replenish us deeply, and hence this annual programme has been designed as a residential, experiential event.

Enjoy the experience of being part of a vibrant learning community.

The purpose of this programme:

This programme will be meaningful to anyone who wishes to explore deeper aspects of ecology and sustainability. It would provide the space and opportunities to explore oneself in a holistic way, including intellectual, physical, emotional and spiritual aspects of our relationships with ourselves, others, various human constructs and with our Planet Earth. Such explorations and learning can lead us to living responsibly and treading gently on Earth.

Become a Facilitator!

It is the first of a series of 5 different programmes to be conducted over 3 years - to support people who want to be facilitators for Inner and Outer Ecolgy Programmes. Two of these will be held in the Sharavathi Rainforest, in the Western Ghats.

It can be attended as a single programme too.

These programmes together are designed to help a person become a Facilitator in Eco-human processes.

It would be particularly useful to teachers / facilitators for learning about sustainable living in schools, colleges and NGOs.

What we will do:

With the help of highly experienced facilitators, for about 7 to 9 hours during each day, we will alternate between various kinds of sessions which would involve active participation by all the group members. These would include:

- *sharing of one's personal stories and related conversations*
- *conceptual understanding of inner and outer ecology, reviewing our lenses and filters and connecting with Nature*
- *hands-on activity in the garden, Nature walks, Nature meditation*
- *Explore eco-spiritual approaches and practices for owning up our ecological identity as earthlings.*

Registration:

For more information:

Contact: bhoomi.college@gmail.com

Or call at 09449853834/080 28441172

Please register before 10th August 2014.

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70, Chikkanayakanahalli Road, Sarjapur Rd,
Carmelaram Post, Bangalore - 560035

RNI No: KARENG/2009/33927

Eco friendly Food and Farming

September 1 - October 8, 2014

At Bhoomi College, off Sarjpura Road, Bangalore – 560 035

"To forget how to dig the Earth and tend the soil, is to forget ourselves"
- Mahatma Gandhi

During this 1 month programme you will participate in workshops and field trips apart from sessions with documentaries, discussions and presentations. You will also be introduced to a network of people committed to eco-friendly food and farming who can foster your interest in food, farming, gardening and sustainable living. Finally we sign off with a Farmer's Market and the Bhoomi Utsav on the 2nd of October 2014.

This programme will be wonderful for your journey... ***Join in!***

Modules include:

- *Understanding Food and Farming*
- *Holistic Food and Nutrition*
- *Millets in our Daily Meals*
- *Organic Farming*
- *Natural Farming*
- *Biodynamic Farming*
- *Permaculture*
- *Visit to Organic Farms*
- *Farmer's Market and Bhoomi Utsav*

Faculty for the above modules will include Shri Narayana Reddy, Shri Devinder Sharma, Ravi Koushik, Rajesh Thakkar, Rahul Goswami, Gyan Sagar, Seetha Ananthasivan, A. Santhilakshmy, I. M. Pushpa

"The glory of gardening: hands in the dirt, head in the sun, heart with nature.
To nurture a garden is to feed not just on the body, but the soul."
- Alfred Austin

For enquiries and registration please contact: bhoomi.programmes@gmail.com

Visit our Facebook page: https://www.facebook.com/BhoomiCollege

For more information on our short programmes visit: www.bhoomicollege.org/short-programmes

Register/subscribe to Bhoomi Magazine at www.bhoomimagazine.org

The Bhoomi College

No. 70, Chikkanayakanahalli Road, Off Sarjapura Road, Bangalore - 560 035
Phone: 080 28441173, 09449853834

www.bhoomicollege.org