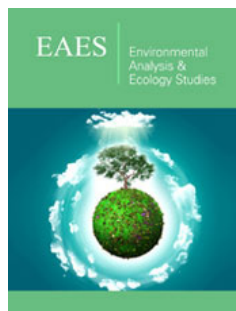



# KELEA Assisted Restoration of Nature's Allostasis (KARNA)

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## Abstract

Nature comprises various levels of interactive and interdependent elements, which collectively help ensure functional stability, adaptability, and predictability. The interactions between defined groupings of physical elements with various life forms are termed ecosystems. Allostasis refers to the adjustments within ecosystems, which maintain their functionality during development and in response to moderate disruptions. This capacity is exceeded at tipping points, beyond which environmental anomalies persist or worsen. Attempts to directly modify the identified aberrant elements often lead to secondary impairments with continuing suboptimal functioning of the ecosystem. This article elaborates on the alternative paradigm of adding natural energy to disordered ecosystems to restore normality. KELEA is an acronym for Kinetic Energy Limiting Electrostatic Attraction. KELEA's primary role is likely to be the prevention of the fusion of electrostatically attracted opposing electrical charges. It also provides an energy source for all life forms. Water can become a carrier of KELEA for many of its beneficial life-force activities, including supporting allostatic adaptations in disordered ecosystems. This was shown using water-activating pellets composed of volcanic material that has been pulverized and heated before being cooled and pelleted. The process is termed Kiko Technology. Kiko Technology used in conjunction with biochar have restored various disordered ecosystems comprising polluted water. As described elsewhere, the initial benefits were followed by the remarkable return of normal aquatic, land, and flying animal wildlife. Moreover, a Kiko-treated region of Spirit Lake, Iowa, is undergoing an unusual die-off of zebra mussels. It is postulated that the restorative process begins with a resurgence of beneficial microbes, which can then outperform pathogenic microbes. The observed continuing improvements are consistent with KELEA assisted restoration of Nature's allostasis (KARNA).

**Keywords:** ACE pathway; Kiko Technology; Biochar; Ecosystem; Pollution; Blue-green algae; Spirit Lake; Zebra mussels

## Allostasis

The term allostasis was introduced by Dr. Peter Stirling to describe how the brain adapts to various stresses by successfully modifying its functional activities [1]. Unlike homeostasis with a preset single mode of optimal brain activity, allosteric adaptations allow for variable modes of optimal brain activity depending upon circumstances. As used in this article, the term allostasis has a wider meaning that applies to many natural phenomena, including the development and functioning of complex ecosystems [2]. Thus, Nature's allostasis allows ecosystems to maintain essential functions despite changes in the various elements in the ecosystems. The resilience of each ecosystem is achieved through compensatory adaptations in response to altered environmental conditions, including during the initial formation and in any subsequent reformation of the ecosystem.

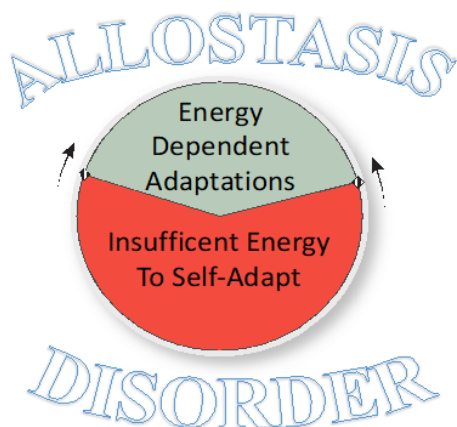
## Interactive Elements Comprising an Ecosystem

The evolutionary development of an ecosystem proceeds stepwise from two or more interacting components. Their interactions create conditions which can accommodate the addition of one or a few additional components to achieve a more complex level of functional activity. This process proceeds to where the ecosystem becomes enormously complex with innumerable symbiotic interactions. One example is the mind-boggling biochemical pathways operating even within a single cell [3]. So too is the multiplicity of interacting life forms in

natural environments. Basic functions can be retained despite the occurrence of factors that alter the levels of some of the many interactive components.

### Energy Requirement for Allostasis Leading to Self-Repair

There are limits, however, to the natural capacity of self-repair and functional normalization of disordered ecosystems. These limits are defined as tipping points, beyond which the disorders will persist unless changes are made to reduce damage back from the tipping point. In some circumstances, only minimal external intervention may be sufficient to bring order back into the ecosystem (Figure 1). Energy is required for allostatic adjustments. In biological ecosystems, the need is primarily for cellular energy, but can also involve biophysical energies. Exchanges of chemical compounds and biophysical stimuli between interactive life forms are fundamental characteristics of living ecosystems. The various components can exist in a wide range of relative concentrations and yet still maintain overall functionality via allostasis.



**Figure 1:** An illustration of the limited extent to which Nature by itself can respond to changed environmental conditions using energy-dependent allosteric adaptations. Additional sources of energy are required to bring a discorded, energy-insufficient, environment back past the tipping points (◆) into the zone of self-correcting allostasis. KELEA can potentially provide this energy, especially through its water-activating actions. Only minimal amounts of KELEA, as indicated by the arrows, may be required to initiate the self-healing process.  
Note: Figure taken from Reference [34].

### The Rhythm and Complexity of Life

A possible analogy is how harmonious music can comprise multiple arrangements of individual musical notes. Yet, the melody can be overwhelmed by the inclusion of antagonistic, disruptive, and interfering sounds. A melody can be achieved with a single instrument or produced by an entire orchestra. In terms of living ecosystems and consistent with evolution, beneficial bacteria, possibly controlled by bacteriophage viruses, are their likely foundation members. These microbes seemingly create favorable

conditions for the inclusion of additional beneficial life forms, which can promote the survival of other life forms in a continuing process. Reestablishing adequate beneficial microbes in a disordered ecosystem is a reasonable goal to help restore life's rhythms. This can be approached by directly adding beneficial microbes, facilitating their growth, or reducing competitive pathogenic microbes or other toxic elements. There is insufficient information to fully define what comprises the totality of either beneficial or pathogenic microbes. Empirically, however, beneficial microbes appear better suited for survival in water that has elevated levels of a life force energy termed KELEA an acronym for Kinetic Energy Limiting Electrostatic Attraction. It is useful to explain what is meant by and the significance of KELEA as a term to describe a life force energy.

### KELEA (Kinetic Energy Limiting Electrostatic Attraction)

The concept of KELEA challenges the assumption that photosynthesis by plants and certain bacteria is the sole net source of cellular energy. The proposed fundamental role of KELEA is to prevent the fusion and elimination of electrostatically attracted opposing electrical charges. It is a radiant energy since the heightened KELEA that develops in association with fluctuating electrical discharges can loosen the electrostatic hydrogen bonding of water molecules in close vicinity to the electrical discharges. The radiant effect occurs especially when the electrical charges fluctuate. The reversible loosening of hydrogen bonding applies to water molecules, which can act as carriers of KELEA. If sufficiently separated, the loosened water molecules can also function in the attraction and further transmission of KELEA [4-10]. Chemical compounds can attract KELEA based on having regional differences in electrical activity, for example, in dipolar and self-assembling compounds such as humic acid [11]. KELEA can also be exchanged in various linked chemical reactions, possibly passing between reactants as KELEA activated water [6]. KELEA supports the Alternative Cellular Energy (ACE) pathway, which differs from cellular energy obtained from food metabolism [4,12,13]. There are also some functional differences between the cellular energy provided by the ACE pathway and that provided by the metabolism of food.

### KELEA May Favor Survival of Beneficial Microbes When Compared to Pathogenic Microbes

Because of its greater permeability, activated water can exert an osmotic challenge to bacteria. One suggestion for the greater susceptibility of pathogenic bacteria to osmotic stress is their diversion of resources to pathogenic activity. Another suggestion is the better balancing of metabolic pathways in beneficial bacteria with more effective use of additional available energy. As an empirical example, the levels of aerobic and anaerobic bacteria in association with the pathogenic fungi that cause pink disease in palm trees were measured before and after the application of KELEA activated water. This empowered the aerobic bacteria to rise from being the least to becoming the most abundant type of microbe, with the essential elimination of pathogenic fungi. The

greatly increased levels of the aerobic bacteria then returned to that of healthy palm trees [unpublished]. The KELEA activated water used in treating the diseased palm trees was produced by adding tinctures of yucca plants to the water. As is common, the actual formulation and process were not publicly disclosed. Still, the many reported anti-inflammatory effects of yucca plant extracts are consistent with its water-activating activity [14]. Similar activity is achieved using extracts of moringa oleifera trees, and ashitaba plants [15-17]. Seeds from moringa trees can reverse water pollution, although it was believed to do so via adsorption and biosorption, rather than water activation [18-20]. Beyond this example are various tinctures used in the formulation of clinically effective homeopathy. A common characteristic of many of the beginning components is attraction to electrostatic charges, indicating the separation of positive and negative electrical charges. The development of homeopathic remedies was based on the belief that compounds that in larger toxic doses induce a specific symptom, could if administered in minuscule amounts, alleviate that symptom. Proof of specificity is lacking and several widely used products can alleviate multiple symptoms occurring in diverse diseases [21,22].

### Means of Attracting KELEA For Transfer to Nearby Water

Both soluble and insoluble compounds can act in the transfer of environmental KELEA to water. The insoluble compounds also typically comprise areas of variable electronegativity. This allows for periodic Maxwell-Wagner discharges, with the presumed release of some of their accumulated KELEA [23]. For example, pelleted volcanic rock materials that have been previously pulverized and heated to about 1,200° Celsius are effective when added to water [9,10,24,25]. The temperature used is likely to be above the melting temperature of certain components, which could then fuse to yield larger collections. One such product is marketed as Kiko technology. Other products come from Kyushu Island in Japan [26]. Mr. Jim Carter had earlier discovered mica-rich water-activating stones in abandoned caves of Native Americans [27,28]. They are marketed as peals. Jim Carter went on to show water activation with calcined magnesium oxide that is prilled into particles and, therefore, referred to as prills. A major advantage of insoluble pellets is their continuing activity over periods of years. Even though the pellets remain in place, the water activation process can extend beyond the pellets. Thus, if water is sufficiently activated, it too can attract and transmit KELEA in a continuing expanding manner. Knowledge is gained with experience of the optimal spacing of pellets over a section of land or body of water.

Containers of KELEA activated water can also be used to initiate a progressive process. This was the principle of the Grander device in which water was passed around an inner compartment of the device that contained activated water [27,28]. Bicycle inner tubes provide easily fillable containers using either a water pump or even the tap in locations in which the water is naturally activated. Water vapor must be prevented from seeping out of the chosen container. Devices with fluctuating electrical impulses provide another means of increasing the local levels of KELEA. These devices can be traced

back to Nicola Tesla (radiant energy), Georges Lakhovsky (multi-wave oscillator), and Royal Raymond Rife (ray beam) [27,28]. The electrical discharges can lead to ionization of the air as in Plasma-Activated Water (PAW) [29]. Regular electrolysis can also activate water, leading to non-thermal vaporization of water molecules midway between the anode and cathode. Stationary devices, such as coils, antennas, pyramids, and in-ground metal rods can also attract KELEA. Such devices may be receiving electrical and magnetic impulses from the various natural and manmade electrical and magnetic impulses passing through the earth, e.g. telluric currents. Certain of these devices have long been used in agriculture under the terms electro-culture and magneto-culture [30]. The beneficial effects on plants are likely to be secondary to KELEA activation of groundwater [31].

### Reversal of Pollution in Parts of Spirit Lake, Iowa

A useful immediate application of KELEA is reversing water pollution and its extended adverse effects on aquatic, land, and flying animals. Remarkably, only a few water-activating pellets, which are composed of previously pulverized and heated volcanic rock material, can initiate the water and wildlife restoration process. This was convincingly shown in studies performed in Spirit Lake, Iowa. The tidal basins (referred to as sloughs) of the lake are noteworthy because of the extensive contamination with toxic blue-green algae (*cyanobacteria*), hydrogen sulfide-producing anaerobic bacteria including *Desulfovibrio* species [32], and agricultural and industrial waste products. There is overgrowth throughout Spirit Lake of invasive zebra mussels (*Dreissena polymorpha*), originally from Eastern Europe [33]. These mussels leach toxic heavy metals from some of the surfaces to which they attach. Yellow perch fish and crayfish are natural predators of the mussels, but their numbers have been greatly reduced in recent years.

Six Kiko pellets were distributed into two canvas bags each containing approximately 15 pounds of biochar, which is the ash from wood that is burned in an oxygen-deprived environment. The bags were placed into a small channel connecting a heavily contaminated slough to Spirit Lake. Within two days, the blue-green algae and rotten egg smell of the channel had disappeared. Upon reinspection six weeks later, not only had the algae and smell been eliminated from the near entirety of the slough, but a beaver had built a dam across the site of the channel at which the Kiko pellets and biochar were applied [34]. Beavers are considered a keystone species in their ability to make the environment more hospitable for other animals. Indeed, muskrats, bullfrogs, and geese had also returned to the area. Other sloughs have been similarly treated with the addition of small amounts of a mineral and amino acid-rich solution. The progressive return of aquatic, land, and flying wildlife to the vicinity of the treated areas has been remarkable. What had been rare or only occasional observations are now being seen more often. These include the sightings of swimming minks, even during the day, bald eagles, and a moose in the water. [35] Yellow perch fish, which had only rarely been caught by fishermen in recent years are now being caught (personal communication from several fishermen). Crayfish have also again been seen swimming in the water. Both perch fish and crayfish can consume the flesh of zebra

mussels [36-38]. Consistent with their increasing presence, some areas the lake shoreline are now showing previously unseen high levels of washed-up zebra mussel shells (Figure 2).



**Figure 2:** Washed-up zebra mussel shells on the shoreline of Spirit Lake, Iowa. The photo was taken on 12/23/2023. As reported by the landowner, the amounts of shells vastly exceeded those of any prior year, which tend to be greatest in early spring. The cause of the die-off of the zebra mussels has yet to be determined. A partial explanation is the reappearance of yellow perch fish and crayfish in the lake, both of which consume zebra mussels. (Photo kindly provided by Mr. Steve Gruhn).

Since 1994 the Federal Government has spent over 1.23 billion dollars to reverse pollution in the Great Salt and surrounding lakes, including Spirit Lake [39]. One endeavor has been the extensive use of copper-containing solutions intended for the selective killing of zebra mussels. Copper poisoning extends to other life forms with potential major adverse consequences. Moreover, recent data indicate a growing tolerance of zebra mussels to copper in its various forms. Efforts are underway to find bacteria that might kill zebra mussels. This approach is also unlikely to succeed. An ever-increasing array of pollutants is being introduced into the Nation's waterways. Some contaminants can potentially be digested by bacteria or adsorbed onto various resins. It is somewhat ironic that the proposed remedies for contaminants can involve the use of additional microbes and/or chemicals.

## New Paradigm of Assisting Rather than Interfering with Nature

The present paradigm is profiting from costly interventions, which are essentially aimed at correcting specific anomalies using means based on limited knowledge of the complexity of Nature. A more effective paradigm is to assist Nature with additional energy so that it can reenter the zone where it can make the necessary allosteric adjustments to restore the full complexity of its interactive components. Insufficient KELEA is viewed as the primary and most easily correctable reason for a disordered biological ecosystem. Different approaches are available to enhance the KELEA levels in water. Some are more suited to restoring health, improving agriculture, and increasing the efficiency of various industries. Insoluble chemical compounds and various types of devices with oscillating or fluctuating electrical activity are currently available to immediately proceed on a worldwide basis to achieve a major paradigm shift. The term KARNA (KELEA Assisted Restoration of Nature's Allostasis) is suggested to help in the focus of the ideas expressed in this article.

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