

“Renaissance Paleo” - bio-mimicking a sustainable lifestyle for healthy modern humans and a healthier planet?

by Bruce Kania



We are losing it. Our water, that is. Of course it's still here, but the natural processes by which it can be used without poisoning us have been marginalized. The natural systems are no longer keeping up with the pollution humans add, and our cleanup efforts, even here in the U.S., are too little too late. Actually this should read "especially" here in the U.S., where conventional farmers are not being held accountable for their share of nutrient pollution....which is approaching 80% of the total. In a sense, agriculture functions as our sacred cow. This is why the number of eutrophied lakes in the U.S. has tripled since 1972, the year the Clean Water Act was first passed by

Congress. Half of lakes in the U.S. are now eutrophied...borderline able to sustain even rough fish, and definitely poised to experience toxic algae blooms. This is the kind of water that can kill a dog that haplessly laps up a mouthful. It is exactly the opposite of the kind of water that represented life, food and sustenance to our paleo ancestors.

Water is curious. The more devoid of nutrients, chemicals and particulates, from organic to inert, the higher we value it. This is probably because pure water is able to sustain far more biocomplexity than turbid water. Sunlight can extend further into it. And even though the very base of the food web, biofilm generating bacteria...the slime guys, don't need sunlight, the next layer on the food web does. And as the food web progresses towards humans, this stair-step approach between life forms must not be short circuited. Sunlight is a primary driver. Healthy water combines with surface area and circulation, think tidal and waves, kelp beds and coral reefs in oceans, gravity and wind and shallow wetlands and deltas in fresh and brackish water. This are all forms of riparian edge, and this is where life and biocomplexity explodes with verdancy when water is pure.



For the last 250 million years most water on planet earth was repeatedly exposed to natural systems that removed particulates. The process is amazingly simple. When submerged surface area, referred to technically as substrata, experiences moving water microbes present on the substrata can access both soluble and particulate forms of nutrients, chemicals, and minerals. The microbes are evolved to flourish in such a setting. As they live and die what's left is called biofilm, which is sticky. The sticky biofilm enhances capture of more particulates, and the cycle repeats itself. The result is water without particulates. High quality pure water. So today, if you are attracted to high quality water, where can you find it?

The answer is that you can go to places on the planet where nature's natural systems are still operating at full capacity. For example, visit high mountain lakes, or at least those not exposed to acid rain. Or maybe some protected headwaters area, deep in a primeval forest. Or the top of a watershed in central Alaska. You get the point....get away from where people happen, and you are more likely to find paleo water.

The paleo lifestyle is more than eating and working out. For us the paleo lifestyle includes our environment, and how we live within it. The paleo lifestyle is a form of biomimetics...where our paleo nature serves as model.



Over the last nine years we have had visitors from 41 different countries present here at the Shepherd Research Center, just outside of Billings, Montana. They have all contributed to the thinking, the testing, the prototyping and ultimately the vetting of ideas around the health of water. Not just water, but also mind, body and spirit, the land, the atmosphere, wildlife, fisheries, and more. But certainly our focus has been around water, the environment, and our personal commitment to mind and body.

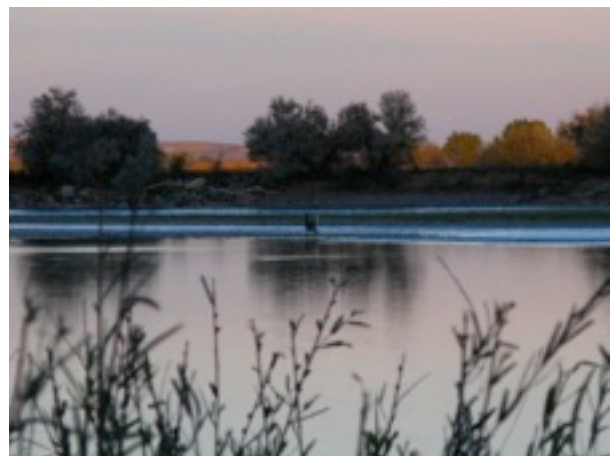
Here is some of what we've learned, and concluded: 1. Our paleo ancestors vectored with shoreline, especially along ocean edge. Today 90% of humans live within 100 miles of an ocean. In the past, this number was even greater due to the biocomplexity and verdancy associated with such "edge."

2. Technology

advances of the last 200 years are a hiccup. They have camouflaged many truly worthy human goals. For example, wisdom, creativity, and joy are rarely even stated as goals today. And as environmental health diminishes, such goals become even more distant.

3. A paleo model for water and environmental health is not just achievable...but fundamental.

Here at Shepherd we've designed and managed for harvest of wild game and heirloom fruits and vegetables. We also harvest some wild plant material. Initially, the bounty of fish, venison, upland birds like pheasant and grouse, and waterfowl and fruit and vegetables would make up perhaps twenty percent of our diet. Today as a result of stewardship, just on a single 6.5 acre test site pond here, over fourteen hundred pounds of wild fish were harvested in 2013. As a private pond in Montana our harvest of fish is not restricted. Wild game however does fall within bag and possession limit reg.s. Even so, today our entire dietary requirements are met by fish, game, vegetables and fruit garnered



from the property. The exceptions to this within our diet are those times we choose to dine elsewhere. A key point here is that this property was "conventional" when we started. Today it is not conventional. Today it is a test site where an experiment in paleo lifestyle is unfolding.

While it would take many more words, more of your time, to completely describe the Shepherd test, here's a look at what it means in terms of water, certainly a critical component within our environment but perhaps even more so in this short grass prairie region of eastern Montana:



1. Water clarity on Fish Fry Lake, the test pond, started off at 14 inches. Today, six years later, it's as high as 19 feet.
2. Catch rate on fish, wild northern yellow perch, black crappie, bluegill and some cutthroat trout, averages a fish every two minutes.
3. Nitrogen fertilizer, which comes into Fish Fry Lake in association with up-watershed farming is at non-detect levels when it leaves. Phosphorus, another farm nutrient, is reduced by half.

In 2012 just shy of 5,200 fish were harvested from the lake. In 2013, the harvest number is over 7,100.



Incidentally, this matches or slightly exceeds the inflow rate of phosphorus. It means we are eating away, literally, at the inventory of phosphorus present within Fish Fry Lake, since other predators are also harvesting nutrients from this water. We are catching up with past sins, so to speak.

Consider that certain life forms, many of the algae including cyanobacteria, with its remarkable potential toxicity, can pull their nitrogen requirements from the atmosphere. So in order to prevent a stewardship bias that favors such life forms, like the cyanobacteria, we looked to nature for a solution. The result has been development of BioHaven floating islands. The islands are now a commercial product, being used around the world to clean up water. Here, where phosphorus is out of balance, we plant the islands with legumes. The plants themselves pull phosphorus from the water, and nitrogen from the atmosphere. And so do the nitrogen fixing bacteria that are omnipresent on the legume roots that grow through the islands. This strategy does not eliminate cyanobacteria, but does compete with it. Nature's model.



Best of all, the islands concentrate surface area. Every cubic foot of island which is made of a filter matrix, provides thousands of square feet of surface area. We maximize the ability of the microbes that naturally colonize such surface area by circulating water through this filter...in fact, a floating stream bed embodiment of island even duplicates a stream like environment, which has been a revolutionary advancement for us. All of this in combination explains why Fish Fry Lake is such a productive wild fishery. The development of the BioHaven family of water quality and wildlife and fishery enhancing products exemplifies

what we do here at Shepherd...integration of natural models into our life.

Our paleo ancestors lived primarily along seashores. Those that lived inland, invariably were associated with waterways. A delightful/thoughtful book called "The Living Shore" by Rowan

Jacobsen tracks how North America was likely initially colonized by humans migrating down the Pacific rim from Alaska. Not fighting and competing with massive predators and herd beasts of the inner continent, but instead stewarding the most delectable of oysters, collecting marine vegetables and fish, thriving on the verdancy of riparian edge. Today as humans fight to understand how to fix their predilection towards over population, and its impact on quality of water and life, that Paleo model is before us. Maybe its the lack of marine derived iodine, and its connection with cranial development that's kept us from seeing this interconnectedness earlier. But it isn't too late. Let's apply Paleometrics to our lifestyle, and watch what comes of it. Perhaps movement towards a paleo lifestyle, with its countless personal benefits, can inspire a modern renaissance.

It's apparent that humanity is in transition. So is the planet. A lead article in the June, 2013 edition of Scientific American, Tiny Plants that Once Ruled the Seas, describes how the planet's food web base is shifting from diatoms to green algae....after 250 million years. The article also associates diatoms with remarkable biodiversity, and raises the question of "what's next?", as excess nitrogen biases in favor of green algae. A challenge for paleo practitioners...not that any of us really need more challenges!...is how do we relate to such a phenomenon? One answer is that we can at least have our paleo water back. But abiding with the status quo does not get us there.



I don't have a formula, or a better answer. But we do have a model here. Fish Fry Lake and the Shepherd Research Center is an ongoing experiment.