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News Release 26 March 2009

For Immediate Release 26 March 2009 San Francisco

LohaFex Ocean Replenishment and Restoration A Success!

We must disagree with the inference and the 'tagging' of the LohaFex experiment with doubt and failure that some nare-do-well reports now present. What this experiment showed is that iron replenishment and ocean ecorestoration is indeed very possible. That the bloom created was quickly converted from living plant biomass into living animal biomass is the natural scheme of ocean ecology. A very positive result not a questionable one.

There can be no question that the few tonnes of replenished iron restored ocean plant life at the same levels of efficiency shown repeatedly by decades of research, that being each tonne of iron yields the plant biomass equivalence of 367,000 tonnes of CO2. Given that this vast amount of biomass is now in the web of ocean life means it is restoring vital ocean fertility.

Recall that the Southern Ocean has suffered decimating loss of plant life, due to iron depletion effects of high CO2, more than 10% of ocean plants are missing from what was seen less than 30 years ago. So while those few tonnes of iron may not have sent the CO2 to the bottom it has taken that amount of CO2 out of the ocean acidification pathway and repositioned it in the standing living biomass of the Southern Ocean. Had those few millions of tonnes of CO2 not become Southern Ocean plant life it would surely now be Southern Ocean acidifying death.

This work showed that there is an absolute need to carefully pick the ocean ecosystem that one aims to replenish and restore to achieve the greatest benefit. It also shows that one must design the work to meet minimal ecosystem demands in terms of scale, timing, location, and ecological implications. What LohaFex did was to replenish a very small amount of iron into a very small patch of ocean that was surrounding the new bloom and already enjoying abundant blooming.

It was surely clear from the first water samples taken that the state of depleted silica meant the ocean had bloomed and consumed other vital mineral nutrients thus limiting the beneficial effect of the iron replenishment. Thus it was known this would redirect the ecological effect toward species that are less dependent on silica. This led quite predictably to less sinking of large diatom carbonate rocks and instead favoured other species. However it also means that the iron, as observed at the end of the project, remains replenished in the surface ocean continuing to benefit the ecosystem for months to come. It is the same as what is happening in that same region of ocean as the observed iron rich icebergs randomly support and sustain a more robust and varied ecosystem. In fact iron leaves the surface ocean primarily fixed to the biomass it stimulates growth of, as it recycles thus no iron goes to waste.

A key feature of the LohaFex blooms is that the very small size of the patch, and the fact that the region was blooming and preloaded with grazers, led to those grazers enjoying the free lunch and dispatching the new bloom in relatively short order. It is as if you decided to plant a tiny patch of lettuce in a vast field of rabbits, the rabbits would graze the emerging lettuce in a flash leaving little to grow to maturity. If had planted a large patch of lettuce some considerable distance from any large populations of rabbits before the rabbits discovered the lettuce patch it would have grown to maturity and be sustaining itself. Lettuce and rabbits would fall into synch along with the rest of the ecosystem and all would flourish.

However even so the LohaFex rabbits (copepods and amphipods) continue to recycle the iron and other nutrients as they eat and defecate and are eaten and converted into healthy whales and other marine life.

What LohaFex does NOT show is that the replenishment of iron to achieve ocean restoration does not work as your report tends to suggest. This politically charged sentiment is nonsense that panders to the distortions of those who would make the guise of science into an excuse for non-critical thinking?

How is it that a forest on land which never leaves the living biosphere to be buried in abysmal sediments is recognized as being of enormous value to the environment and society and its carbon content as standing biomass is allowed to be monetized in emerging carbon markets to provided an economic stimulus to the planting, restoration, and protection of forests.

So most certainly LohaFex is another, albeit small, step along the path to understanding how we must proceed to becoming active stewards of our oceans. Those oceans are by all accounts in the most dire of straits as reports are showing. Only this year the Southern Ocean was reported to be doomed to tip over the proverbial deadly tipping point of ocean CO2 acidification by 2030, a mere 21 years away. That tipping point is certain based on the preloaded carbon bomb of hundreds of gigatonnes of CO2 already in the air and destined to dissolve into the surface ocean. It will occur regardless of whether we slow additional emissions, as the first carbon bomb is more than sufficient to produce the deadly acidification. The only means to counter that first carbon bomb is by replenishing the oceans mineral micronutrients and accomplishing ocean ecorestoration. The restored ocean plants will fix and convert deadly CO2 into ocean life, the phyto-plankton, copepods, amphipods and whales of PolarStern's voyage.

My own company Planktos Science is well known in this field and in fact we worked hard some few years ago to convince the German and Indian scientists to engage in a much larger more ideally situated, longer term, and better suited iron replenishment experiment. Sadly the attacks on this topic by means of lies and subterfuge of the likes of Greenpeace scared the Germans and Indian partners into this minimalist effort which is now most useful in proving How Not To engage in meaningful ocean restoration.

The efforts of some few nare-do-well cynics who would cast this important work into the mere context of the fight story over potential CO2 sequestration results does a grave disservice to this important field of ecorestoration science and to the planet.

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For immediate Release: March 18th 2009 San Francisco

100 MONTHS TO SAVE THE PLANET NEEDS ACTION MORE THAN WORDS
Subhead: Saving the planet affordable to many amongst the super rich

Summary: A Green Crusade to save the planet needs no more talk, it needs a new age of Camelot where princes and

knights stand with lives and fortunes forfeit to replenish and restore our seas and trees. Many times the planet saving results called for in the Kyoto Protocol may be achieved for \$1billion not \$1trillion.

In recent speeches Prince Charles has warned, "The best projections tell us that we have less than 100 months before we risk catastrophic climate change."

Prince Albert of Monaco stated upon his recent return visiting more than 20 Antarctic research stations worried openly on his concerns about climate change effects on that fragile environment, "You know that the colder the ocean, the greater the volume of carbon dioxide that can dissolve in it; thus it is the icy waters of the Polar Regions that will suffer the first effects of acidification." He further elaborated on the effects of carbon dioxide on phytoplankton's changing role in the food chain. "These organisms play a vital role in the food chain because they are the food for small crustaceans such as Krill which feed whales and many other vertebrates," he said. "But these organisms also play a major role in absorbing the carbon dioxide through photosynthesis."

To those working to develop and deliver the means to mitigate the impact of high and rising CO2 these Princely endorsements are most welcome. We question his focus on climate change alone and his call for behavioural changes as opposed to more potent direct actions. The immovable glacial progress of changing climates is indeed a monumental problem that will alter environments with stunning effects. While being irreversibly set on course a 100 months from now it won't become critical for large populations for a century or more.

The picture is imminently different in the world's oceans, covering 70% of this blue planet, where the twin impacts of CO2 are both decimating plant life and causing deadly ocean acidification today. These ocean impacts are already responsible for what paleoscientists call the greatest mass extinction in geologic history. The prognosis for the oceans is they will topple over the CO2 tipping point by 2030, near enough to the Prince Charles 100 months. Only if we replenish and restore the ocean plants will those plants avert utter collapse of the ocean ecosystems within the lifetimes of the vast majority of people alive today. We must succeed with, not merely begin, ocean restoration in just 21 years.

The calls by the rich and famous including Prince's Charles and Albert, Sir Richard Branson, and Al Gore, for society to change clearly seems to many to be a hollow call to transcendental or political change as opposed to potent direct actions. Any one of the plethora of the super rich could make all the difference in the world and singularly accomplish replenishment and restoration of the ocean plants and pastures within 100 months. But the context of what might be done has been cast as too much for any one person or even one country especially when climate economists report on the hundreds of billions expected to be spent achieving the goals of the Kyoto Protocol. Less than 1% of Kyoto funding, easily within reach of the super rich, might replenish, restore, and reverse the demise of the oceans in time. A scant billion dollars per year would suffice to restore and save the oceans.

Restoring the ocean pastures to a condition seen only 30 years ago would accomplish a CO2 conversion of 4-5 billion tonnes of CO2 many times that called for in the Kyoto Protocol into ocean plant life. In a world facing HRH's 100 month crisis due to 8-10 billion tonnes too much CO2 accumulating in air and ocean each year a Prince and a few worthy knights could accomplish the saving of the oceans and planet during a 100 month crusade. Alas if this were the age of Camelot honorable princes and knights would stand forth and declare their lives and fortunes forfeit in loyal allegiance to such a worthy call to action. Should we expect any less on behalf of Mother Earth, our children, and our grandchildren?

In princely words HRH Charles states this to be "a most critical challenge" that requires we prevail "to avoid bequeathing a poisoned chalice to our children and grandchildren." Prince Albert notes "Awareness of climate change is underway. Awareness of man's responsibility in this phenomenon is slower but it is developing." We argue that the Prince's have not gone far enough in their clarion call. Words from the comfort of podium and palace that we have a 100 months to succeed or that future generations will develop solutions are not enough. What is needed is a crusade with at least a Prince to lead it. We at Planktos Science have already beaten to quarters and called for all hands on deck to replenish and restore the oceans, we call upon Prince Charles and Prince Albert II and others to join us.

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News Release 10 March 2009

For Immediate Release
10 March 2009 San Francisco & Antarctica

Southern Ocean Whales Bid Fair Winds And Following Seas To The Crew Of PolarStern So Long And Thanks For All The Fish From The Restored Ocean Pasture

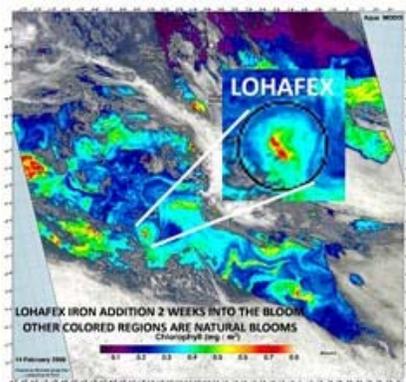
RV PolarStern and her European/Indian ocean replenishment and restoration team sails for home. The flagship German research vessel of the European Union and her science crew of 50 scientists from India and around the world departed from their Southern Ocean pasture a day or so ago. The ship and her dedicated scientists had prescribed and on January 27th administered 10 tonnes of iron to a several hundred sq. kilometer patch of ocean. The iron was just the tonic the ocean needed and within days a verdant ocean pasture began to bloom. Ocean satellites picked up an image of the bloom on Valentines Day, what better gift for Mother Earth, than an ocean restored and growing nutritious plankton for every form of sea life from tiny krill to the great whales and everything in between fish, penguins, seals, and seabirds.

The project, years in planning, had run into a brief tempest and delays whipped up by the spin of dark green organizations as it was about to begin. Claims that the work would be in violation of some mysterious laws, were quickly proven to be false. Those spinning the claims were the same dark greens who in many statements have declared that they are against mitigation of climate changing CO2 that involves the production of carbon offset credits.

As EU president Vaclav Klaus stated earlier this week, "Environmentalists are less concerned about any crisis posed by global warming than they are eager to command human behavior and restrict economic activity." The EU president has that right even though his skepticism on the topic of global warming, wrought by the obvious casting of the topic as a political fodder by the dark greens, is ill advised. He's hardly alone in his choosing to oppose the idea of climate change when faced with such obvious politicization of the important topic. More intelligent and caring leaders prevailed in Germany reversing a nefarious order by German environment minister that threatened to stop the project as the ship arrived in mid January in the Southern Ocean.

Ocean replenishment and restoration as proven possible by this experiment might remove seven times as much CO2 from the air as the Kyoto Protocol calls for. The oceans pastures have been decimated by high CO2 resulting in billions of tonnes of lost plant life in just a few decades. Replenishing the mineral micro-nutrients, esp. iron, can restore those pastures and turn billions of tonnes of CO2 into ocean life instead of acidifying ocean death.

Here at Planktos Science we are tickled green that the LohaFex ocean replenishment and restoration project has gone so well. The tonnes of iron replenished are now growing what will be millions of tonnes of plankton biomass which in turn will



Which of these blooms is not like the other?

LATEST NEWS

Marine life faces 'acid threat' - 20 times faster than previously thought BBC 25 Nov 08

Man-made pollution is raising ocean acidity at least 10-20 times faster than previously thought, a study says. Researchers say carbon dioxide levels are having a marked effect on the health of shellfish such as mussels.

They sampled coastal waters off the north-west Pacific coast of the US every half-hour for eight years.

The results, published in the journal PNAS, suggest that earlier climate change models may have under estimated the rate of ocean acidification.

Professor Timothy Wootton University of Chicago, says such dramatic results were unexpected as it was thought that the huge ocean systems had the ability to absorb large quantities of CO2. "It's been thought pH in the open oceans is well buffered, so it's surprising to see these fluctuations," he said.
read more ...

Southern Ocean close to acid tipping point in 2030 Nov. 12, 2008 Australian Broadcasting Corporation

Australian researchers have discovered that the tipping point for ocean acidification caused by human-induced carbon dioxide emissions is much closer than first thought.

The results, published in Tuesday's Proceedings of the National Academy of Science, show that these seasonal changes will actually amplify the effects of human carbon dioxide emissions on ocean acidity, speeding up the process of ocean acidification by 30 years.

Ben McNeil, senior research fellow at the UNSW's Climate Change Research Centre, says the ocean is an enormous sink for carbon dioxide, but unfortunately this comes at a cost. "The ocean is a fantastic sponge for CO2, but as it dissolves in the ocean it reduces the pH of the ocean, so the ocean becomes more acidic."

Once the acidity of the Southern Ocean reaches a certain level, the shells of pteropods and other calcareous marine creatures will start to dissolve.

"That's a really bad point to get to," says McNeil. "After that point, we can't go back unless we suck the CO2 out of the atmosphere."

This so-called 'tipping point' of acidification had been predicted to occur when atmospheric CO2 levels hit 550 parts per million, around the year 2060.

McNeil says ocean acidification could lead to large-scale ecosystem changes, affecting not just plankton but other marine life including fish, whales and dolphins.

"They're at the base of the food chain ... so right now we don't really know the ramifications."
read more ...

Fall in tiny animals, ocean zooplankton, a biodiversity disaster of enormous proportions BBC News 10 July 08

Experts on invertebrates have expressed "profound shock" over a government report showing a decline in zooplankton of 73% since the 1960s. The rate of decline is increasing, with a 50 per cent loss between 1960 and 1990 and then another 50 per cent loss in the next 16 years.

The tiny animals are an important food for fish, mammals and crustaceans.

Figures contained in the Department for Environment Food and Rural Affairs (Defra) document, Marine Programme Plan, suggested a fall in abundance.

ADDITIONAL LINKS

produce hundreds of thousands of tonnes of krill and other zooplankton. The next step on that food chain are the baby calves of the Southern Ocean Great Whales as the new pasture is within their traditional nursery. The food chain formula tells us to expect tens of thousands of tonnes of whales being nourished from this wonderful gesture led by Chief Scientists Victor Smetacek and Wajih Naqvi, our most heartfelt thanks to you both. For more information on ocean replenishment and restoration visit www.planktos-science.com

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News Release 09 March 2009

FOR IMMEDIATE RELEASE

The Real Problem is Not Tomorrows CO2 But Yesterdays CO2

EU President Says Environmentalists Want to Command Human Behavior. Hearing the president of the EU frame the context of "global warming" in this context is most welcome. It inspires comment. He is both right and wrong. He is quite correct in his observation that the dark green movement has been and is exploiting global warming and climate change to seize power and run modern society back to some stone age fantasyland. He is utterly wrong to equate this with the notion that there is no problem with fossil CO2. There is a big problem only its not bearing down on us at the slow pace of changing glaciers, it is much near than that.

While many international leaders debate or work toward emission reduction strategies and carbon capture and storage the real problem is not tomorrows CO2 but yesterdays CO2. Nor is the central problem the role CO2 has in Global Warming.

We must turn our attention to the 1000+ gigatonne carbon bomb, two centuries of accumulating CO2, still mostly in the air as it takes centuries for airborne CO2 to equilibrate with the rest of the planet. Reports call the alarm of ocean acidification, adding acid flames to the raging fires of fossil CO2. What's missing is mention of the best, only, means to fight ocean acidification and CO2 in the air.

Just 500 gigatonnes of yesterdays CO2 has reached the oceans where Revelle's Rule tells us 80% of CO2 ends up. The first carbon bomb will be exploding in the ocean for more than a century even if we stop the emission of new CO2 today. No amount alternative energies, recycling, bicycling, or "clean coal" will tend to the first carbon bomb. Sure lets reduce the size of the second bomb but first things first. Here's how.

ONLY ocean replenishment and restoration can enlist, as allies, the most powerful force of nature - the ocean plants, the bloomin' plankton. But high and rising CO2 in the air is not only responsible for ocean acidification worse it has fed green plants on land making them greener, bushier, and living longer making them "good ground cover."

Ground cover improvements have reduced the amount of dust blowing in the winds by 1/3 in just a few decades. For the oceans dust in the wind brings vital mineral micro-nutrients that terrestrial Yin (dust) is just as important as rain, the Yang, blowing from sea to land nurturing plant life. Since earth and ocean satellites went aloft 30 years ago we've measured decimation of ocean plants, 10% are gone from the Southern Ocean, 17% from the N. Atlantic, 26% from the N. Pacific, and 50% from the tropical seas. Just yesterday, a few decades past, ocean pastures grew more verdant consuming 4-5 billion tonnes more CO2 each year than today.

Today, as stewards of our blue planet, we must replenish ocean micro-nutrients to restore the verdant ocean pastures. If we bring the ocean plankton blooms back to levels seen only 30 years ago those plants will annually convert billions of tonnes of CO2 into ocean life instead of acid ocean death. Those verdant restored ocean pastures will deliver 7 times the CO2 reductions called for by the Kyoto Protocol.

To begin, and we must without delay, the work requires only tens of millions of dollars, to succeed in a matter of a decade requires only a few billion dollars. In the bargain the restored oceans will feed everything from tiny krill to the great whales and everything and everybody in between - fish, seabirds, penguins, seals and us.

Replenish and restore the oceans without delay.

Contact: Russ George here at Planktos Science for more details. [info\(at\)planktos-science\(dot\)com](mailto:info(at)planktos-science(dot)com)

News Release 06 March 2009

FOR IMMEDIATE RELEASE:

Planktos Science Conveys Demands From Ocean Life

Attention humans of earth. We are the plants, phytoplankton, of the sea, the greatest life-sustaining force in your universe, and we are losing hope and patience fast. You are wantonly destroying our kin and your own survival chances as well. We produce most of the planet's oxygen, devour over half it's CO2, feed all ocean creatures, and are the greatest allies you've got on this blue planet. Yet you starve us of vital nutrients and scald us with toxic acid forming emissions, thereby decimating our numbers, starving the seas and trashing your climate, too.

This is criminal, senseless and suicidal behavior and we demand that you cease at once, replenish and restore the vital mineral micro-nutrient dust we need to live - it's a fact all we are is dust in the wind. Let us get back to work converting acid forming CO2 to our nutritious selves, restoring the ocean pastures, feeding all sea life and cleansing the skies for you.

For those unacquainted with our problems or power, here are some remedial facts:

- 1) We Are Indispensable. We are the biggest players in the global carbon cycle, photosynthesizing billions tons of airborne CO2 to feed virtually every creature in the sea and create 60% of your breathable air. Trees and grasses help a lot with the oxygen, but most of the heavy lifting is handled by our plankton crowd.
- 2) We Are Perishing At An Alarming Rate. In 2003 NASA scientists warned you that 17% of ocean plants have disappeared from the North Atlantic, 26% from the North Pacific, and more recently in 2007 you reported 50% of plant life has gone missing from the Tropical Seas. We have been eradicated from what you now call the "Clearest Water on Earth" a vast region of the Eastern South Pacific, now bereft of our life force. Losing this staggering number of our kind means billions of tons less food for sea life everywhere, billions of tons more acid forming in the oceans, and worsened climate change for you.
- 3) It Is Your Fault. In the Eighties, Dr. John Martin, a legendary oceanographer and our favorite biped by far, diagnosed our malaise as iron deficiency. We desperately need natural mineral iron to treat our anemia, grow, and photosynthesize, and in the open sea our principal source is wind-borne dust from arid lands. Today the high CO2 in the air is helping terrestrial plants grow greener, bushier, and live longer in arid regions. Your satellites have measured and you have reported that the ocean-bound dust clouds bearing our life-giving iron have fallen off by a third in the last two decades alone, thanks to your endless CO2 belch and increasingly successful farming. While we don't begrudge our terrestrial brethren their growth spurt, your force feeding them CO2 makes them better ground cover thus dramatically reducing the dust that blows in the wind that ought to be bringing us our vital mineral micro-nutrients. Just as rain brings life from sea to land we have always received in return lands vital dust. Give it back, we are dying.
- 4) You Can Turn It All Around. Martin told you, and your finest ocean scientists confirm, that we could be restored to health just by replenishing our vital mineral dust, but he also connected the iron-plankton-climate dots and saw that reviving us could help end global warming, too. "Give me half a tanker of iron and I will give you an ice age," he quipped, obviously

Charity Buglife, UK organization focusing on invertebrates, said it could be a "biodiversity disaster of enormous proportions".
read more ...

Greenhouse Gases, Meet Your Worst Nightmare: Plankton Discover June 26, 2008

Call it a happy accident: Phytoplankton in tropical areas of the Atlantic Ocean may be helping to break down greenhouse gases.



PICOPLANKTON

After analyzing data gathered by airplane and in a lab at Cape Verde, a chain of Atlantic islands not far from West Africa, a team of British researchers was pleased but puzzled to find that ozone in the atmosphere near the islands had decreased 50 percent more than climate modelers had predicted.

The reason, they think, is that phytoplankton produce chemicals like bromine monoxide and iodine monoxide that get pulled up into the atmosphere. Once aloft, these chemicals can break apart ozone molecules. Not only that, says Alastair Lewis, of the U.K.'s National Centre for Atmospheric Science, but the byproducts of that first chemical reaction then broke down methane, a much worse greenhouse gas than carbon dioxide, into non-harmful components. read more...

Dust Storms In Sahara Desert Trigger Huge Plankton Blooms In Eastern Atlantic

ScienceDaily (Feb. 2008) — Scientists on board RRS Discovery are at sea studying the Saharan dust that blows off the coast of Africa - triggering huge plankton blooms in the eastern Atlantic.

Saharan dust is rich in nitrogen, iron and phosphorus and acts as a fertilizer on the production of plankton.

The quantity of dust involved, about 500 million tonnes per year, is sufficient to affect the climate. By partly absorbing and partly reflecting sunlight, the dust particles heat the air but cool the ocean surface. They also encourage cloud formation, which reinforces the reflection of light back into space. read more...



Canary in a tux? Penguin woes signal sea problems

WASHINGTON (AP) 01 July 08 — The dwindling march of the penguins is signaling that the world's oceans are in trouble, scientists now say. Penguins may be the tuxedo-clad version of a canary in the coal mine, with generally ailing populations from a combination of global warming, ocean oil pollution, depleted fisheries, and tourism and development, according to a new scientific review paper.

A University of Washington biologist detailed specific problems around the world with remote penguin populations, linking their decline to the overall health of southern oceans.

"Now we're seeing effects (of human caused warming and pollution) in the most faraway places in the world," said conservation biologist P. Dee Boersma, author of the paper published in the July edition of the journal *Bioscience*.

recognizing you would continue to ignore our plight unless there was something in it for you. Martin was a trifle optimistic, but we are in fact incredibly efficient and only need one kilogram of iron dust to capture 367,000 kilograms of CO₂ in our green organic selves.

5) Serve yourselves. Most of our restored bounty will recharge the ocean food chain, some will also sink into the abyss, in total we will remove billions of tonnes of greenhouse gas from your skies for centuries and more. And thanks to the Kyoto Protocol that marine blizzard of settling carbon becomes sunken treasure that you can trade as emission reductions or "carbon credits" making you money. Do the math. Replenish to us one ton of mineral iron dust and we convert deadly CO₂ into ocean life instead of acid death and hundreds of thousands of tons of CO₂ is safely managed. You can then sell some of this to pay for your work replenishing us, restoring the oceans and repair your climate, too. Just return us to our 1980 levels and we will feed your starving multitudes, sinking billions of tons of carbon dioxide and bring you food as well as a cooler, safer world.

6) You've Got To Move Now. Your scientists tell all that we have only until the year 2030 before it is too late for us, if nothing is done by then the carbonic acid will have sealed our doom. Replenished with our vital dust and restored to health and our original numbers, we will zero out half of all manmade emissions annually or seven times more than called for by the Kyoto Protocol. Working with us to save our common blue home will cost you a couple billion compared to the trillions you are now spending on your financial mess. Help us, replenish and restore our ocean pastures and this would be the same as shutting down every fossil fuel power plant on the planet or running every single car on hydrogen (which still remain splendid ideas, by the way).

So here are our extremely reasonable and non-negotiable demands:

Demand #1: Give Our Iron Back.

You now have belched hundreds of billions of tonnes of CO₂ into the air of all of us. You are dangerously in arrears. Your mortgage is so far underwater only we can bring it back to the surface for you. The IPCC and NASA gave you the target, Martin gave you the technical know how, and Kyoto gave you a hell of a self-serving way to repay this morbid debt. Besides saving our kind and everyone we feed, you could actually profit from protecting your climate, coasts, and fisheries. For those craving justice and real solutions this is admittedly far too sweet a deal, so we insert another point.

Demand #2: Use Some Of The Profits To Help Move Away From Fossil Fuels.

Burning our ancestors to cruise around town or heat a shopping mall seems irreverent and appalling enough. But then letting those who milk this traffic usurp your governments, trash the peace, and ruin your health seems unspeakably stupid, too. The carbon we'll be sinking for you is worth a lot of money. Just be sure a fair share of the profits flow to those working to cure your fossil fuel addiction, and not to foment more lobbyists for the deadly status quo.

Demand #3: If You Are Too Afraid To Go All The Way Just Stop At Restoration.

Just bringing us back to recent par of 30 years ago will solve half of your CO₂ problems on land and much of ours at sea. And we can both get there safely without entering any unknown territory. Any further climate cures you need from us we can discuss when we are back to some semblance of health, in the meantime you tackle the emission side where this trouble all began.

Demand #4: Defrock The Spin Doctors For Negligence, Malpractice, And/OR Self-Serving Green Greed.

Bear witness to and stop those in your so called "green movement" who profit on the back of our mortally wounded planet as they use Mother Earth as a poster victim whose displayed suffering and the angst it creates in the minds of men as the means to seize political power. Turn your technological society back to your stone-age, and collect billions in tithes from the faithful. Take note that they attack the most affordable and immediate solution, that would heal our wounds, as a dangerous techno-fix that will allow the multitudes to continue to live, in what they eschew, as the lap of technological luxury. They would rather Mother Earth lie bleeding and dying on display on your super highway, run down by your fossil fueled planes, trains, and automobiles than to see her and us given first aid and helped back to health where a less pitiful appearance will lessen their revenues.

Equally bad are those opposing our replenishment and restoration with cries of, "no geo-engineering," "don't touch the oceans," and "beware the precautionary principle." Translated this means "close your eyes, turn away and let us and the oceans die." The fact is you have already beaten us with murderous efficiency and effect. And undoing the harm you've done is not "geo-engineering," it is usually called healing or restitution or just merciful common sense. Don't accept that merely screwing in another CF light bulb or buying a fashionable new hybrid car or any amount of recycling or bicycling will suffice. Do those things but don't imagine that those things alone are not too little too late.

Each year we watch in disbelief as legions of oceanographers and other scientists deliver thousands of papers on the disastrous state of our seas and your climate. But instead of joining forces to fight for us or even championing remedies, the vast majority just shrugs off our demise and moan, "the real problem is our shrinking research budgets." It's as though your physician found you tested positive for sixteen cancer symptoms, but instead of trying to heal you said, "Not so fast, we've got thirty more really cool expensive tests we'd like to run." If your doctors had watched you waste away for fifty years, but instead of trying to help just demanded more research funding, who would you think they are really working for?

Stop the climate bankers and brokers from turning climate change markets into yet another leveraged derivative investment, Ponzi scheme, or Enron-style energy market gaming escapade. Don't help them destroy the low cost replenishment and restoration of ocean plants and pastures that will so dramatically diminish their deadly profits. How dare they project upon the biotechnology call to replenish and restore plankton a dangerous "killer app" that will dominate their climate marketplace when it is they who are the collaborators with the killers.

Finally tell the advocates of wildly inflated, expensive, and infatuated engineering and geo-engineering schemes that their five hundred dollar hammers and hundred billion dollar rocketry plans, firing fleets of beach umbrellas into orbit or clouds of noxious gases into the upper atmosphere to shade earth from the sun will only kill us faster. We live on sunlight and we breathe out your air in doing so.

We thought Hippocrates taught you, "First do no harm," but every day you let us perish you compound the harm you've done to us, yourselves and the biosphere, and it is so insanely dumb. Doing nothing amid a tragedy is in itself an act of grave consequence as you should have learned by now in Auschwitz, Rwanda, New Orleans, and more recently on Wall and High Streets.

Final Offer

So here's the deal. You replenish the mineral dust and the iron you have taken from us, we take down half your CO₂ and we feed your multitudes with incredibly healthy sea food. Working together we could make your so-called civilization carbon neutral and start to defuse the huge hundreds of gigatonne CO₂ Carbon Bomb you've sent airborne since you first started burning coal and oil. This will also replenish your oxygen, buffer the life dissolving acid seas, and restock our entire blue world with fish and birds and whales and life. This is a simple, just and even profitable resolution - a win-win situation to the power of ten.

If, however, you do not heed our call and start to show some sense damn soon, we shall be unable to avoid siding with the voices now advising Mother Earth to reboot her whole operating system back to the cyanobacterial sea of slime and re-start evolution again in hopes of an intelligent outcome next time.

So now it's up to you. Choose wisely and choose soon. 500 million years of evolution is a terrible thing to waste.

With sincere impatience and subsiding levels of regard,

The Phytoplankton

"Many penguins we thought would be safe because they are not that close to people. And that's not true."
read more ...

Marine life is destroyed by acid environment

London Telegraph 06/2008

Traditional marine communities containing creatures such as sea urchins and snails are being destroyed as CO₂ emissions make their environment more acidic

Working in the Mediterranean the team found different gradients of acidity caused by gases emerging from the volcanic vents which allowed them to use it as a 'time tunnel' and to look at the type of conditions expected in our oceans in 2020, 2050, 2100 and beyond.

I must admit I though a lot of the claims being made about species disappearing amounted to scaremongering but now I have seen it with my own eyes. read more...

Scientists paint grim picture of human impact on oceans.

The Age Feb. 08

ALMOST half of the world's oceans have been seriously affected by overfishing, pollution and climate change, according to an international study of humankind's impact on marine life published in the Journal Science.

A team of 19 scientists has published the first comprehensive map showing the combined impact of human activity on seas and oceans. More than 40% of marine regions have been significantly altered, while just 4% remain in a pristine state
read more ...

Sea floor Cores Show Tight Bond Between Dust And Past Climates

ScienceDaily (Feb. 29, 2008) — Each year, long-distance winds drop up to 900 million tons of dust from deserts and other parts of the land into the oceans. Scientists suspect this phenomenon connects to global climate--but exactly how, remains a question. Now a big piece of the puzzle has fallen into place, with a study showing that the amount of dust entering the equatorial Pacific peaks sharply during repeated ice ages, then declines when climate warms. The researchers say it cements the theory that atmospheric moisture, and thus dust, move in close step with temperature on a global scale; the finding may in turn help inform current ideas to seed oceans with iron-rich dust in order to mitigate global warming. read more

Sea life in peril -- plankton vanishing

SF Chronicle July 2005

Oceanic plankton have largely disappeared from the waters off Northern California, Oregon and Washington, mystifying scientists, stressing fisheries and causing widespread seabird mortality.

The phenomenon could have long-term implications if it continues: a general decline in near-shore oceanic life, with far fewer fish, birds and marine mammals. No one is certain how long the condition will last. But even a short duration could severely affect seabird populations because of drastically reduced nesting success, scientists say. read more...

Asian Dust Storm Causes Plankton To Bloom In The North Pacific; Robotic Carbon Explorers Test The "Iron Hypothesis"

In Nature

ScienceDaily (Oct. 25, 2002) — In the spring of 2001, two robotic Carbon Explorer floats recorded the rapid growth of phytoplankton in the upper layers of the North Pacific Ocean after a passing storm had deposited iron-rich dust from the Gobi Desert. The carbon measurements, reported in the October 25

issue of Science, are the first direct observation of wind-blown terrestrial dust fertilizing the growth of aquatic plant life. [read more...](#)

News Release 24 November 2008

FOR IMMEDIATE RELEASE:

Planktos Science Calls For Global Ocean Rescue Plan

Last week the most horrific of all scientific reports on the state of CO2 impact on the oceans was released by the Australian Academy of Sciences. It reports that previous estimates for the reaching of the 'tipping point' for the acidification of the Southern Ocean, the death sentence for higher life there, were way out and that in fact that tipping point would be reached in a mere 21 years, by 2030 ([link](#)).

The picture for the worlds oceans which have been suffering first and foremost from the deadly effects of CO2 is as follows: the Southern Ocean has lost 10% of its net primary productivity NPP (read green plants) since the first ocean observing satellites went up in the early 1980's, the N. Atlantic has lost 17% NPP in that time frame, the N. Pacific has lost 26% NPP, and the sub-tropical tropical seas (from Science 2006) have lost 50% NPP. So while the Southern Ocean has the most recent and authoritative deadline the rest of our oceans are in equal if not worse condition. To corroborate this in another report from 2006 the authors reported on finding "The Clearest Water on Earth" - this find was not in the lakes buried under the miles of Antarctic ice but rather the waters between Tahiti and Chile where the finding of such clear water defines a vast part of the sub-tropical Eastern Pacific bereft of life when it ought to be green and murky with life.

While many cry out for the 'cause populaire', reduction of fossil fuel use, the reality of the harm and history of CO2 emissions is tied to its long residence time in the atmosphere before it is mostly absorbed by the oceans. In the oceans CO2 either becomes living ocean plant biomass, we like to call it the ocean forest, via photosynthesis or it becomes ocean acid via the first principals chemical reaction $H_2O+CO_2=H_2CO_3$ (Carbonic acid). As James Hansen and his many co-authors, published in the past few days, the CO2 levels already in the air at 389ppm are far to high already and only a significant reduction downward offers hope. They say the much ballyhooed targets of stopping CO2 at 450ppm or 550ppm represent a death sentence for life as we know it. They reiterate the fact that CO2 in the air today much of which was part of emissions as long ago as a 100 years or more is deadly enough even if we were to severely curtail our current emissions. No one expects our emissions to be curtailed substantially in the next 21 years which is the time the oceans have left.

So where does this leave us. There is only one hope. What is an absolute necessity is that we immediately begin a global eco-restoration of our green plants. Not mere reduction of emissions and the destruction of plants on land and more importantly at sea, but restoration of plant life to levels experienced at a minimum the 30 years ago when we began to gather data of such quality that we can be certain of the decline. The new-forestation projects we have and am created in Europe and the Americas are a start and of some use but we simply don't have enough forestable land to make a dent in the problem.

Where we can achieve an enormous gain in green plant life on this planet, in time, and affordably, is in our oceans. Those losses of ocean NPP mentioned add up to a CO2 conversion from ocean acid to ocean plant life measured in tonnes of CO2 equivalence of 4-5 billion tonnes per year. Given that the net problem on this planet of excess CO2 is 8-10 billion tonnes per year, ocean eco-restoration might just buy us the time we need. This is especially true as this ocean focus will first and foremost address the CO2 crisis where it is hitting first and hardest as ocean acidification and loss of ocean plant life.

Some 20 years ago the late Prof. John Martin unraveled the Gordian knot that was the role of mineral micronutrients in ocean plant ecology. He discovered that the key mineral micronutrient iron, which arrives in the oceans primarily in the form of windblown dust, was regulating ocean photosynthesis with enormous potency. For each tonne of iron from the dust that becomes part of ocean photosynthesis 367,000 tonnes of CO2 are fixed into ocean phyto-plankton, the planktos. Now some 20 years later and a quarter of a billion dollars in international research his remedy has been confirmed. If we replenish the iron we have denied the oceans we might restore ocean plant productivity and save life on this blue planet and even the terrestrials that share it.

At Planktos Science we are undertaking the R&D along with collaborating scientists from the worlds leading ocean research institutes to work out the details out on how to restore our oceans, and perhaps just it time, slow the onslaught of ocean demise for a few extra decades. Provided we are successful we will see a resurgence of life in the oceans and if life on land can match what life at sea can deliver and we reduce our carbon footprints maybe, just maybe, we can save life of earth.

What you might do is consider helping in this cause for ocean eco-restoration. We can use all the help we can muster. 21 years is just not enough time to engage in political debate while the worlds ocean burn.

News Release 4 October 2008

FOR IMMEDIATE RELEASE:

October 4, 2008

Trillions To Save Financial System Nary a Pittance To Save Living Ecosystems

(Ocean Ecorestoration Requires Mere Billions To Save This Small Blue Planet)

San Francisco: The present global financial crisis is proving that society is willing to take incredible actions for the common good, or at least for the benefit of our banking and credit systems. As we see trillions being allocated to forestall economic upheaval, the sums required to actually save and restore ecosystems on this small blue planet are not even found in the rounding errors.

While our financial world needs saving on one hand, that effort may dangerously distract us from the far more critical and root level planetary demands of the most deadly crisis here on Earth, fossil CO₂. Indeed the staggering financial efforts might well be seen in history, if there is anyone left to write that history, as being a major contributor to the destruction of the living ecosystems and ourselves. We cannot afford to fix just one broken part of our world.

The deadly crisis we face is the lethal and short term effect of fossil CO₂ but it might not be in the way you think. Sure everyone knows anthropogenic CO₂ is causing global warming but that is by definition a glacially slow process. What we ignore as we plod in step with the glaciers is the far more rapid and dangerous chemical role of CO₂ in the surface ocean. Living on a small Blue Planet as we do, one might have thought this blue chemistry would be our major focus. Simply put, the CO₂ we've fumed into the air over the past century is more than sufficient to change the oceans to acid. H₂O + CO₂ = H₂CO₃ (carbonic acid) is the first principals chemistry that is well underway and rapidly progressing. Regardless of whether we emit more CO₂, which we are sure to do, the chemical dose already administered will, in a matter of a 3 or 4 decades if we fail to act now, acidify the oceans sufficiently to re-boot the planetary ecosystem and bring back the slimy beginning of life on "earth", the bacterial sea.

Russ George, president/ceo of Planktos Science says, "There is no penny to spare, there is no political game playing time and attention to waste, and there is no hope for higher life on this small blue planet if we do not begin to substantially reverse the acidification of the oceans through ocean ecorestoration over the course of the next 20 years. We have no more than this century to complete the task."

The rounding errors from bailing out our financial world would be more than sufficient to restore the ocean world that makes up 70% of this blue planet. As we restore the ocean plants, the planktos, they will compete with simple chemistry and like trees on land use the power of photosynthesis to turn deadly CO₂ into ocean life instead of ocean death. Ocean acidification is resolvable through ecorestoration with a few (mere) billions of dollars per year to restore lost plankton blooms that have been destroyed by high and rising CO₂.

Let's save our credit institutions for today but more importantly, and for a tiny fraction of that cost, lets save our planetary ecosystem for tomorrow. If we don't then surely our intelligent race is destined to be just one of the millions of lines of failed life on this small blue planet.

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News Release 3 September 2008

British Royal Society and New Ocean Science Papers Call For Ocean Restoration Research Identical To Planktos Science Plans

In July & August two major scientific papers have described the need to study 'iron fertilization', what we more accurately refer to as ocean ecorestoration. What both papers call for is identical to the proposals of Planktos Science.

First the British Royal Society tasked a blue ribbon team to study and report on the topic. Thier initial report titled "Ocean Fertilization: a potential means of geoengineering" states that the potential of this method requires "more extensive targeted fieldwork."

The second paper authored by an international team titled "Designing the next generation of ocean iron fertilization experiments" states that research to date is lacking due to the small scale briefly studied bloom projects and that to answer uncertainties in this field " longer duration (i.e. months) and larger scael observations (100-200 km length scale) are required."

We are delighted to read this coming from the Royal Society and such highly regarded scientists as these recommendations match precisely the work Planktos and Planktos Science have been working to undertake.

This endorsement of identical research to that of Planktos Science is a welcome breath of fresh sea air in a field that has been seriously harmed by 'anti-science' organizations opposing the work of Planktos Science in particular and all research in this field. The orchestrated coordinated efforts of those groups to attack the proposals, scientific credibilty, and people of Planktos is now clearly shown to be the anti-science smear campaign that it was. With such august bodies as The Royal Society now standing in suport of identical efforts as the Planktos Science team we hope the world media and public will now understand the critical importance of this work.

The referenced papers in this release are: Desinging the next Generation of ocean iron fertilization experiments by Watson, Boyd, et al Published in Marine Ecology Progress Series Vol. 364:303-309, 2008 July 29, 2008 and Ocean fertilization: a potential means of geoengineering? by Lampitt, Achterberg, et al Published in Philosophical Transactions of The Royale Society Phil. Trans R. Soc. A doi:10.1098/rsta.2008.0139

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News Release 13 August 2008

North Pacific Puffin Populations Show Dramatic Decline ***The Problem For Puffins* : San Francisco**

Planktos-Science research vessel Arctic Alpha Wulf, a 40 ft sloop, with Captain Jerry Borucki is reporting a dramatic decline in sea bird observations on this 4th year of passages through the North Pacific and into Bering Sea and Arctic Ocean. While all sea bird numbers appear to be dramatically declining year to year over most noted is this years dramatic decline and scarcity of Puffins. Arctic Alpha Wulf is on her way to the North Pole and if ice conditions, which look good at this point, permit will become the first sailboat to ever reach the North Pole.

Captain Jerry Borucki, now in his retirement years and in the grand tradition of naturalist explorers including Darwin and Audubon, is making use of careful observation and ordinary scientific instrumentation to contribute the the understanding of the changing environment of the oceans. With 40 years of scientific work as a ice physicist for NASA Ames Research

Center, Jerry Borucki is a very capable sailor with over 60,000 ocean miles, passionate naturalist, and wild-life film producer.

Captain Jerry reports, "Puffins are easy to spot as their wings move much faster than any other bird and are very black with a dot of orange on the bow." Being easy to spot and also being a critical marker species for the health of the ocean ecosystem their stunning population collapse is most dramatic and alarming. Normally our Puffin observations number in the hundreds and thousands as one nears Unimac Pass in the Aleutians but this year only a few dozen birds have been spotted over a course of hundreds of miles on either side of the pass.

Planktos-Science believes this reported loss of Puffins in the North Pacific and Bering Sea correlates closely to the repeated reports of declines of Puffins in the North Atlantic. This bodes ill for the state of ocean health and especially the ocean planktos ecology which is now undergoing catastrophic ecological shifts. Puffins which feed on tiny fish which in turn feed on the plankton are just one step on the food chain away from the primary phyto-plankton producers.

The problem for Puffins is clearly tied to the hundred gigatonne fossil CO2 "carbon bomb" (that is the fossil CO2 poured into the atmosphere over the past century) now dissolving into the surface oceans producing dramatic acidification and ecological change. This acidification is especially damaging to the smallest of life forms in the oceans which of course are the microscopic plant plankton, the ocean forest. Compounding the crisis is the fact that cold oceans, like the ones Arctic Alpha Wulf is crossing, are capable of absorbing more CO2 than warm oceans hence the deadly impacts are revealed there first.

While Arctic Alpha Wulf sails her research course, she is doing her share sparing the emission of more fossil fuel CO2. Tragically the crisis observed in the oceans today is derived more from the past century of fossil fuel emissions which are only now producing these dramatic and deadly changes. Even though reducing additional CO2 emissions is a good thing it is our historic CO2 emissions that portend doom for the Northern Seas and the oceans worldwide. Planktos-Science believes that the only hope for the ocean ecology and the Puffins is ocean eco-restoration, the mission of the company is to develop and deliver this First Aid for Mother Nature. If, through eco-restoration, the phyto-plankton blooms can be restored to levels of only a few decades ago billions of tonnes of CO2 now destined to become ocean acid (H2CO3) will instead become standing biomass, feeding the entire food chain and Puffins. More information can be found on the work of Planktos-Science on its web site at www.planktos-science.com

Links to the Puffin Crisis: You can also do a simple Google search on the word Puffin!

[Puffin Numbers Plummet at the Farne Islands Garden and Green, UK - Jul 27, 2008](#)

The Farne Islands off the Northumberland coast has reported a dramatic drop in numbers of Atlantic Puffins on the islands compared to a count five years ago ...

[England's biggest puffin colony shrinking United Press International -- Jul 26, 2008](#)

BAMBURGH, England, July 26 (UPI) -- The breeding population of Atlantic puffins in England's largest colony has dropped sharply in the past five years, ...

[Runnin' out of puffins ChronicleLive, UK - Jul 26, 2008](#)

PUFFIN numbers on the Farne Islands have fallen by a third, bird watchers have found. Nearly 20000 fewer breeding pairs returned to the islands to nest this ...



[National Trust reports sharp fall in puffin breeding numbers InTheNews.co.uk, UK - Jul 26, 2008](#)

The National Trust has reported a sharp fall in the number of puffins breeding in the UK. Results of the trust's quarterly survey show a decrease of about a ...

[Puffin numbers in decline after storms Glasgow Daily Record, UK - Jul 26, 2008](#)

A HUGE decline in puffin numbers in the North Sea has been revealed by a survey. Breeding pairs have fallen a third in the past five years on the Isle of ...

[Numbers of puffins in decline Mirror.co.uk, UK - Jul 25, 2008](#)

A dramatic decline in puffins in the North sea has been confirmed by a new National Trust survey. Breeding pairs have fallen by a third in the past five ...

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News Release 27 June 2008

Planktos Science Re-Opens For Business — SAN FRANCISCO

The Planktos Science team is back in business following the dissolution of its association with Solar Energy and Planktos Corp.. Following a long and sometimes difficult road of trying to create Planktos Corp. as a public company in association with Vancouver promoters, the founders and people of Planktos formerly dissolved all association with Planktos Corp. and Solar Energy as of February 2008. The decision of SOLAR to not complete the original funding agreement whereby the Planktos team was to the join forces with it to create and operate the public company and other difficulties were cited as the reason for the dissolution.

Formal filings were made with the US Securities and Exchange Commission detailing the legal agreement which specifies the dissolution of the parties relationships. Mr. Russ George, founder of Planktos, was allowed to recover all rights to know

how and technology use of the name Planktos, and is guaranteed that no interference with any work he might do in this field would come from SOLAR Energy or parties associated with SOLAR and Planktos Corp. [read the SEC filing here...](#)

The new company Planktos Science, based in the San Francisco Bay area with affiliate offices in Canada and the European Union will proceed with it's work on Ecorestoration of damaged ecosystems both at sea and on land. The company expects to be able to swiftly regain its momentum having shed the substantial burdens of being a public company.

Russ George, President/CEO/Chief Scientist says, "The need to engage in ecorestoration to bring our natural ecosystems back to some part of the health they enjoyed as recent as a few decades ago has never been more urgent. The blizzard of reports on the rapidity of the collapse of the ocean ecosystem in particular is terrifying, we can only hope that we might repair some of the harm already done and growing more critical. A timid conservation only ethic will simply serve to render us spectators in the demise of a habitable planet. "

Exactly 20 years after warning America about global warming, a top NASA scientist said the situation has gotten so bad that the world's only hope is drastic action.

James Hansen told Congress on Monday, June 20th., that the world has long passed the "dangerous level" for greenhouse gases in the atmosphere. He said Earth's atmosphere can only stay this loaded with man-made carbon dioxide for a couple more decades without changes such as mass extinction, and ecosystem collapse.

"We're toast if we don't get on a very different path," Hansen, director of the Goddard Institute of Space Sciences who is sometimes called the godfather of global warming science, "This is the last chance."

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CONTROVERSY

Tragically some environmental organizations have attacked this field of ecorestoration science in an attempt to prohibit further ocean research. Their reasons for this cynical attack seem complex but in reality boil down to their determination to oppose all ecological and biotechnological solutions to climate change. As these methods act immediately to reduce the crisis, in doing so these effective eotech solutions undermine the political platform of the green groups who demand a radical reduction of energy use. They have chosen to engage in a classical 'strawman attack' demonizing their opposition through the publication and spreading of 'spin doctored' press releases replete with obvious lies and propaganda suggesting that there is no scientific basis and that there are no laws governing this field. It is all, in their words, like some sort of "wild west" arena. Nothing could be farther from the truth but in this age of instant Internet blogging, gossip mongering, and mudslinging, truth is something that takes a little time and effort to learn. Sadly there is always some media outlet looking for a quick story conforming to media's central editorial premise - "if it bleeds, it leads." This provides fertile ground for these attacking organizations to harvest funds via their fear mongering "campaigns" but it comes at the expense of our dying oceans. Science, especially complex ecology, doesn't do well in sound bites so please [read more...](#)

Here are a few insightful articles in support of our work

The Iron Shore of Science Journalism, Nature News downplays a message found in a bottle.

from ADAMANT - What's the matter with Science & the Media

The gap between environmental science and its representation to the public continues to widen. The prospective use of iron to reduce CO2 by enhancing plankton blooms at sea has created one of the warmer fronts in the Climate Wars. [read more...](#)

Has Personal Bias Been Allowed to Derail the Normal Progression of Ocean Fertilization Science? An Open Letter to the Marine Science Community "Ed - quite brilliantly dissects hidden politics in play, from Iron Fertilization News Blog by Steve Kerry"

Given the extreme hazard of global warming, the recent revelations of ocean acidity, and reports of bio-system collapse of various sorts, one would think that the concept of Ocean Iron Fertilization would get be treated most seriously. Although controversial and not yet completely proven, this technology still might be very important to the world. As Ken Johnson of Monterey Bay Aquarium Research Institute said: "We're headed towards climate conditions that Earth hasn't experienced in millions of years...We can't afford to ditch any potential solutions just now." [read more...](#)

The vicious lie behind the global warming scare From Truth, Justice, and the America Way.

The environmentalist movement believes that unless immediate and drastic measures are taken to combat global warming, "disease, desolation and famine" are "inevitable" on a scale that might spell the end of life on earth, making earth "as hot as Venus." Surely, such an apocalyptic threat demands immediate action. Given the resistance to curtailing industrial production (not to mention the economic destruction and mass death that such a curtailment would entail), environmentalists should eagerly supports experiments that attempt to compensate rather than eliminate the impact of industry on the environment.

In fact, a number of relatively simple, low-cost measures have been proposed by scientists and entrepreneurs, one of which is documented in the June 2008 issue of Popular Science (PDF). As early as 1988, oceanographers proposed seeding the oceans with iron, which would cause an algae bloom that could rapidly compensate for the entire effect of industrial civilization for far less money that it would cost to eliminate CO2 emissions. Seeding experiments by the Woods Hole Oceanographic Institution have demonstrated that the technique works, although further experimentation is required. A

number of entrepreneurs, such as Russ George of Planktos Corp (TED video) stepped forward to carry out the required work.

How would you expect environmental groups to react to such an opportunity? If you guessed outright or even cautious optimism, you would be dead wrong. [read more...](#)

University of Hawaii at Manoa Researchers Discover New Pathway for Methane Production in the Oceans 7/3/2008 HONOLULU, HAWAII

A new pathway for methane production has been uncovered in the oceans, and this has a significant potential impact for the study of greenhouse gas production on our planet. The article, in the journal Nature Geoscience, reveals that aerobic decomposition of an organic, phosphorus-containing compound, methylphosphonate, may be responsible for the supersaturation of methane in ocean surface waters.

David Karl, an Oceanographer in the School of Ocean and Earth Science and Technology at the University of Hawai'i at Manoa and lead author of this paper, was interested in this "methane enigma" and why the surface ocean was loaded with methane. "When people began measuring methane in the ocean, they found that methane concentrations varied with geographical location and with water depth", says Karl. "If methane was inert in the ocean, its concentration should be constant and nearly equal to the concentration in the atmosphere. What the scientists found was that methane was lower than expected in deep waters, implying net consumption by microbes. However the big surprise was that near surface concentrations are supersaturated, higher than in the overlying atmosphere which indicates a local production of methane in the sea. Because methane is produced only in regions devoid of oxygen and since the surface ocean contains high oxygen levels this was perplexing enigma."

"This is a newly recognized pathway of methane formation that needs to be incorporated into our thinking of global climate," says Karl. "Since our oceans cover ¾ of the planet, you just need to stimulate this pathway a little bit and you're going to create more methane. And one way you can tweak it is to stratify the oceans, which we know will happen. All of the climate models show that the ocean will become more nutrient limited over time."

Phil Taylor, Acting Head of the Ocean Section, Division of Ocean Sciences at the National Science Foundation (NSF) agrees. "This remarkable discovery about methane production where we thought there would be none is a harbinger of many new insights on the ocean's changing biogeochemical nature, and the intricate microbiological reasons for those changes." [read more...](#)

A Stern warning on climate change

UK Guardian 27 June

Nicholas Stern says the cost of climate change is likely to be double his original estimate. The reality could be even worse.

Stern's conclusion that it would cost 2% of GDP to tackle climate change, rather than the 1% of GDP he previously said would be necessary in his ground breaking 2006 review, is based on a troubling assumption. It assumes that 2% of GDP will be the cost of stabilizing greenhouse gases in the atmosphere.

Any more would trigger a sharp increase in the scale of likely impacts and risk of irreversible catastrophic changes. [read more...](#)

No Precedent in all earth history.

HONOLULU — International Fishers Forum meets in Honolulu June 18

Charlie Veron, former chief scientist of the Australian Institute of Marine Science, opened the Forum with a presentation on ocean acidification.

He says, "Anthropogenic carbon dioxide is increasing so abruptly that it is now causing fatal mass bleaching of corals worldwide and is set to trigger global mass extinctions through ocean acidification. The rate at which this is happening has no precedent in all Earth history." [read more ...](#)

NASA Top Scientist: 'This is the last chance'

WASHINGTON (AP) 23 June 08 — Exactly 20 years after warning America about global warming, a top NASA scientist said the situation has gotten so bad that the world's only hope is drastic action.

James Hansen told Congress on Monday that the world has long passed the "dangerous level" for greenhouse gases in the atmosphere. He said Earth's atmosphere can only stay this loaded with man-made carbon dioxide for a couple more decades without changes such as mass extinction, and ecosystem collapse.

"We're toast if we don't get on a very different path," Hansen, director of the Goddard Institute of Space Sciences who is sometimes called the godfather of global warming science, told The Associated Press. "This is the last chance." [read more ...](#)

SEATTLE PI— June 2008

Oceans Turning Acidic

Scientists are still figuring out what the oceans are going to look like as they become more acidic due to the absorption of carbon dioxide.

John Guinotte of Bellevue's Marine Conservation Biology Institute was co-author of a [paper](#) in the Annals of the New York Academy of Sciences. It's a nice overview of what's known about the effects of ocean acidification.

It ends with a call to arms to slow the burning of fossil fuels. Said Guinotte in a statement:

"The risk of irreversible ecosystem changes due to ocean acidification should enlighten the on-going CO2 emissions debate and make it clear that the human dependence on fossil fuels must end quickly."

And for some in-the-field research check out this piece in *Nature* looking at corals growing near undersea volcanic vents, which simulates the conditions caused by higher CO2. [read more](#)

'Only 50 years left' for sea fish

By Richard Black Environment correspondent, BBC News website

There will be virtually nothing left to fish from the seas by the middle of the century if current trends continue, according to a major scientific study.

Stocks have collapsed in nearly one-third of sea fisheries, and the rate of decline is accelerating.

Writing in the journal *Science*, the international team of researchers says fishery decline is closely tied to a broader loss of marine biodiversity.

Steve Palumbi, from Stanford University in California, one of the other scientists on the project, added: "Unless we fundamentally change the way we manage all the ocean species together, as working ecosystems, then this century is the last century of wild seafood." [read more...](#)

Where Have All the Fish Gone?

From the August 2008 Trumpet Print Edition »

The collapse of America's West Coast salmon fishery has an eerily familiar ring to it. Are the oceans dying? By Robert Morley

When explorer John Cabot discovered mainland North America in 1497—touching down in what is probably Newfoundland or Labrador today—he found the most fantastic fishing grounds the world has ever seen. The waters teemed with ocean life.

When Cabot returned with stories of the Grand Banks, where cod appeared so thick that a person "could walk across their backs" and they could be caught by just scooping them out of the water with wicker baskets, the news sparked a mania.

Today, the Grand Banks are fished out. The cod are gone, and so are the commercial stocks of flounder, Greenland halibut, and redfish.

On May 1, U.S. federal authorities declared the West Coast ocean salmon fishery a failure. The declaration opened the way for Congress to provide economic aid for California, Oregon and Washington.

The declaration stemmed from the sudden collapse of the Chinook salmon in California's Sacramento River. According to the *National Post*, the closure of both the commercial and recreational Chinook salmon fishery was the first such ban in 160 years (May 3).

Unfortunately, man always has to learn things the hard way. Overexploitation of resources and the destruction of the environment is the story of mankind—it is the story of our cod, our forests and soils, our fresh water. If things don't change, it will be the story of the oceans. [read more ...](#)

Overfishing of krill threatens ocean ecosystem

Reuters May 25, 2008



SINGAPORE: In the global rush for resources, a tiny pink crustacean living in the seas around Antarctica is testing man's ability to manage one of the last great fisheries in the world without damaging the environment.

Krill, which grow to about six centimeters, or two inches, occurs in vast schools and is the major source of food for whales, seals, penguins and sea birds. Without it, scientists say, the ecosystem in and around Antarctica could collapse. [read more...](#)

Sea's Ebb And Flow Drive World's Big Extinction Events, Study Suggests

ScienceDaily (June 16, 2008) — If you are curious about Earth's periodic mass extinction events such as the sudden demise of the

dinosaurs 65 million years ago, you might consider crashing asteroids and sky-darkening super volcanoes as culprits.

But a new study, published on line June 15, 2008 in the Journal Nature, suggests that it is the ocean, and in particular the epic ebbs and flows of sea level and sediment over the course of geologic time, that is the primary cause of the world's periodic mass extinctions during the past 500[sc1] million years. [read more...](#)

Ocean Life Under Threat From Climate Change

ScienceDaily (June 11, 2008) — "Marine ecosystems are undoubtedly under-resourced, overlooked and under threat and our collective knowledge of impacts on marine life is a mere drop in the ocean," wrote Dr Anthony Richardson, from The University of Queensland and CSIRO, and his co-author, Dr Elvira Poloczanska from CSIRO in Hobart.

"There is an overwhelming bias toward land-surface studies which arise in part because investigating the ocean realm is generally difficult, resource-intensive and expensive," they said.

The disparity in focus on land-based compared to marine impacts was highlighted in the Intergovernmental Panel on Climate Change's (IPCC's) Fourth Assessment Report (2007), which included 28,500 significant biological changes in terrestrial systems but only 85 in marine systems. [read more...](#)

Origin Of 'Breathable' Atmosphere Half A Billion Years Ago Discovered

ScienceDaily (Oct. 30, 2007) — Ohio State University geologists and their colleagues have uncovered evidence of when Earth may have first supported an oxygen-rich atmosphere similar to the one we breathe today.

The study suggests that upheavals in the earth's crust initiated a kind of reverse-greenhouse effect 500 million years ago that cooled the world's oceans, spawned giant plankton blooms, and sent a burst of oxygen into the atmosphere.

That oxygen may have helped trigger one of the largest growths of biodiversity in Earth's history. [read more...](#)

Climate change is killing the oceans' microscopic 'lungs'

The Independent - Thursday, 7 December 2006

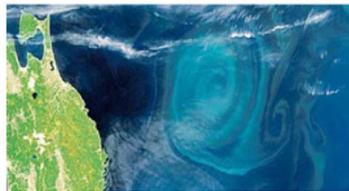
Global warming has begun to change the way microscopic plant life in the oceans absorbs carbon dioxide from the atmosphere - a trend that could lead to a dramatic increase in the heating power of the greenhouse effect. [read more...](#)

Major News Clips

THE TIMES

How surge in plankton may be the saviour of mankind

Lewis Smith, Environment Reporter
The Times of London
May 3, 2007



INTERNATIONAL Herb & Tribune BUSINESS

Huge swaths of plankton planned to fight climate change

By Matt Richte
Published: May 1, 2007

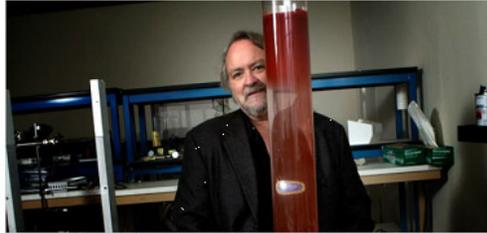
SAN FRANCISCO: Can plankton help save the planet?

Some Silicon Valley technocrats are betting that it just might. In an effort to ameliorate the effects of global warming, several groups are working on ventures to grow vast floating fields of plankton intended to absorb carbon dioxide from the atmosphere and carry it to the depths of the ocean. It

The New York Times
nytimes.com

May 1, 2007
The Energy Challenge

Recruiting Plankton to Fight Global Warming



Russ George, the chief executive of Planktos, wants to grow massive floating fields of plankton, in part to mitigate carbon emissions



By Alison Shadbolt, Planktos via AP

The research ship Weatherbird II heads on a two-year mission to spread tons of iron ore dust in areas of the Pacific Ocean in hopes of stimulating plankton growth.

Project aims to 'seed' oceans to heal them

By Jane Ayers, Special for USA TODAY

Trees may not sprout from the ocean, but that doesn't stop one expert from talking about the need to save the ocean's "forests."

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