

Return-Path: <rick.lumpkin@noaa.gov>  
Received: from islay.aoml.noaa.gov (inferno.aoml.noaa.gov.  
[192.111.123.247])  
by mx.google.com with ESMTPS id  
a44sm10660309yhe.21.2012.10.18.13.15.43  
(version=SSLv3 cipher=OTHER);  
Thu, 18 Oct 2012 13:15:44 -0700 (PDT)  
Message-ID: <5080636F.3080504@noaa.gov>  
Date: Thu, 18 Oct 2012 16:15:43 -0400  
From: "Rick.Lumpkin@noaa.gov" <rick.lumpkin@noaa.gov>  
Organization: NOAA/AOML  
User-Agent: Mozilla/5.0 (X11; Linux x86\_64; rv:10.0.8) Gecko/20121012  
Thunderbird/10.0.8  
MIME-Version: 1.0  
To: Luca Centurioni <lcenturioni@ucsd.edu>  
Subject: Re: New York Times piece  
References:  
<CAHw8FPU6OnOi8pt8tRZhG+f5qfL3tv=KD\_iibt+AHivNUH0Fnw@mail.gmail.com>  
<50805864.7070807@noaa.gov> <007601cdad6b\$3ee47d40\$bcad77c0\$@ucsd.edu>  
In-Reply-To: <007601cdad6b\$3ee47d40\$bcad77c0\$@ucsd.edu>  
Content-Type: text/plain; charset=windows-1252; format=flowed  
Content-Transfer-Encoding: 8bit

Hi Luca,

I don't have that option from my web browser. Here's the text:

Iron-Dumping Experiment in Pacific Alarms Marine Experts

By HENRY FOUNTAIN

<[http://topics.nytimes.com/top/reference/timestopics/people/f/henry\\_fountain/index.html](http://topics.nytimes.com/top/reference/timestopics/people/f/henry_fountain/index.html)>

Published: October 18, 2012

An environmental entrepreneur whose plan to dump iron in a patch of the Pacific Ocean was shelved four years ago after a scientific outcry <<http://www.newscientist.com/article/dn12111-company-plans-eco-iron-dump-off-galapagos.html>>

has gone ahead with a similar experiment without any academic or government oversight, startling and unnerving marine researchers.

The incident has prompted an investigation by Canadian environmental officials, and in the United States, the National Oceanic and Atmospheric Administration said it was misled into providing ocean-monitoring buoys for the project.

The entrepreneur, Russ George

<<http://www.loe.org/series/series.html?seriesID=27>>, said his team scattered 100 tons of iron dust in mid-July in the Pacific several hundred miles west of the islands of Haida Gwaii, in northern British Columbia, in a \$2.5 million project financed by a native Canadian group.

The substance acted as a fertilizer, Mr. George said, fostering the growth of enormous amounts of plankton that were monitored by the team for several months. He said the result could help the project meet what it casts as its top goal: aiding the recovery of the salmon  
<<http://topics.nytimes.com/top/reference/timestopics/subjects/s/salmon/index.html?inline=nyt-classifier>>  
fishery for the native Haida people.

But marine scientists and other experts said the experiment, which they learned about only in news reports this week, was shoddy science, irresponsible and probably in violation of international agreements intended to prevent tampering with ocean ecosystems under the guise of trying to fight the effects of climate change  
<<http://topics.nytimes.com/top/news/science/topics/globalwarming/index.html?inline=nyt-classifier>>.

While the environmental impact could well prove minimal, they said, it raises the specter of what they have long feared: rogue field experiments that could one day put the planet at risk.

Mark L. Wells <[http://www.umaine.edu/marine/people/profile/mark\\_wells](http://www.umaine.edu/marine/people/profile/mark_wells)>, a marine scientist at the University of Maine, said that what Mr. George's team did "could be described as ocean dumping."

Noting that blooms like those that the team observed occur regularly in the region, Dr. Wells said it would be difficult for Mr. George to demonstrate what impact the iron had on the plankton. And Dr. Wells said it was "extraordinarily unlikely" that Mr. George could prove that the experiment met another crucial goal of the project: the permanent removal of some carbon dioxide from the atmosphere.

Plankton absorbs carbon dioxide and settles deep in the ocean when it dies, sequestering carbon. The Haida had hoped that by permanently burying carbon dioxide, a greenhouse gas, they could sell so-called carbon offset credits to companies and make money.

Iron fertilization is contentious because it is associated with geoengineering  
<[http://www.nytimes.com/2011/10/04/science/earth/04climate.html?\\_r=0](http://www.nytimes.com/2011/10/04/science/earth/04climate.html?_r=0)>, a  
set of proposed strategies for counteracting global warming through the deliberate manipulation of the environment. Many experts have argued that scientists should be researching such geoengineering techniques  
<<http://www.climate-engineering.eu/>> – like spewing compounds into the atmosphere to reflect more sunlight or using sophisticated machines to remove carbon dioxide to combat rising temperatures.

But because tampering with the environment is risky, they say, any experiments must be carried out responsibly and transparently, with involvement by the scientific community and proper governance.

NOAA acknowledged that it had provided equipment for the project, in this case 20 instrument-laden buoys that drift in the ocean for a year or more and measure water temperature, salinity and other characteristics. Such buoys are often sent out on what the agency calls "vessels of opportunity," and the data they provide, uploaded to satellites, is publicly available.

But a spokesman said the agency had been "misled" by the group, which "did not disclose that it was going to discharge material into the ocean."

The nature of Mr. George's project was first reported this week in an article in *The Guardian*, a British newspaper, after it was revealed by the ETC Group <<http://www.etcgroup.org/>>, a watchdog group in Montreal that opposes geoengineering.

"Geoengineering is extremely controversial," said Andrew Parker <[http://belfercenter.hks.harvard.edu/experts/2701/andy\\_parker.html?back\\_url=%2Fabout%2Fpeople.html%3Ffilter%3DP%26groupby%3D1&back\\_text=Back](http://belfercenter.hks.harvard.edu/experts/2701/andy_parker.html?back_url=%2Fabout%2Fpeople.html%3Ffilter%3DP%26groupby%3D1&back_text=Back)>,

a fellow at the at the Kennedy School of Government at Harvard who studies the issue. "There is a need to protect the environment while making sure safe and legitimate research can go ahead."

Mr. Parker said it appeared that the project had contravened two international agreements on geoengineering, the London Convention <<http://www.imo.org/OurWork/Environment/SpecialProgrammesAndInitiatives/Pages/London-Convention-and-Protocol.aspx>> on the dumping of wastes at sea and a moratorium declared by the United Nations Convention on Biological Diversity <<http://www.cbd.int/>> – as well as a set of principles <<http://www.geoengineering.ox.ac.uk/oxford-principles/principles/?>> developed at Oxford University on transparency, regulation and the need for public participation.

Mr. George denied that his experiment was related to geoengineering, and said that regardless, 100 tons was a negligible amount of iron compared to what naturally enters the oceans.

"This is a community trying to maintain its livelihood," he said of the Haida.

He said his team had collected a "golden mountain" of data on the plankton bloom. "This is the most intensively state-of-the-art study that's ever been done," said Mr. George, who described himself as chief scientist on the project and said he has training as a plant ecologist. He refused to name any of the other scientists on the team.

Scientists who have been involved with sanctioned iron fertilization experiments strongly disputed Mr. George's assertion about the quality of his experiment, saying that it was roughly 10 times bigger than any other but that the ship used – a fishing boat – and the science team were clearly insufficient.

Victor Smetacek <<http://www.awi.de/People/show?smetacek>>, an oceanographer with the Alfred Wegener Institute for Polar and Marine Research <<http://www.awi.de/en/home/>> in Germany who recently published an analysis

<<http://www.nature.com/nature/journal/v487/n7407/full/nature11229.html>>

of the last sanctioned experiment, which took place in 2009 in the Southern Ocean, said Mr. George's project would give a black eye to legitimate research. "This kind of behavior is disastrous," he said, describing Mr. George, with whom he had brief contact more than five years ago, as a "messing around, bumbling guy."

Mr. George, who lives in Northern California, was previously in the public eye when, as chief executive of a company called Planktos

<<http://www.planktos.com/>>, he proposed

<<http://query.nytimes.com/gst/fullpage.html?res=FA0B1FF6385A0C728CDDAC0894DF404482>>

a similar iron-fertilization project, in the equatorial Pacific west of the Galápagos Islands, whose purpose was the sale of carbon offsets.

Under cap-and-trade

<[http://topics.nytimes.com/topics/reference/timestopics/subjects/g/greenhouse\\_gas\\_emissions/cap\\_and\\_trade/index.html?inline=nyt-classifier](http://topics.nytimes.com/topics/reference/timestopics/subjects/g/greenhouse_gas_emissions/cap_and_trade/index.html?inline=nyt-classifier)>

programs in various countries, polluters can offset their emissions

<<http://www.nytimes.com/2009/05/31/business/31view.html>> of greenhouse gases by buying credits from projects that store carbon or otherwise mitigate global warming.

The project was canceled in 2008 after what his company called a "disinformation campaign" by environmentalists and others made it impossible to attract investors.

Mr. George said that during that period he was contacted by the Old Massett Village Council,

<<http://www.haidanation.ca/Pages/Governance/bandcouncil.html>> one of two Haida groups on Haida Gwaii, about "wanting to do something about their fish," which had suffered population declines.

But John Disney, the council's economic development director, said he had worked with Mr. George on other projects before that, including a proposal to generate carbon credits by replacing alder forests on the islands with conifers. That project never came to fruition.

Mr. Disney defended the iron sprinkling project, saying that it had been approved by Old Massett's 750 villagers and that it had been cleared by the council's lawyers.

He said at least seven Canadian government agencies were aware of the project. But a spokesman for one of the agencies, Environment Canada <<http://www.ec.gc.ca/default.asp?lang=en>>, said it had only recently learned about "the incident" and was investigating <<http://www.thestar.com/news/canada/politics/article/1272964--environment-canada-to-probe-ocean-experiment-on-west-coast>>.

Mr. Disney also said that the marine science community, including the researchers at the Wegener Institute in Germany, had known about the project.

But Mr. Smetacek disputed that as well. "I've had no contact with this guy on this," he said, referring to Mr. George.

On 10/18/2012 04:00 PM, Luca Centurioni wrote:

> Hi Rick,  
>  
> I can't access it (no subscription). Could you save as pdf and resend?  
> Thanks.  
>  
> Best,  
>  
> Luca  
>  
> ~~~~~  
> Luca Centurioni  
>  
> Standard Mail Address:  
> Scripps Institution of Oceanography  
> Physical Oceanography Research Division  
> 9500 Gilman Drive  
> Mail Code 0213  
> La Jolla, CA, 92093  
> USA  
>  
>  
> Courier Address:  
> Scripps Institution of Oceanography  
> Physical Oceanography Research Division  
> Keck OAR  
> 8851 Shellback Way  
> Suite 164  
> La Jolla-CA-92093-1501  
> USA  
>  
> tel: +1 858 5346182  
> fax: +1 858 5348045  
> ~~~~~  
>

>> -----Original Message-----

>> From: Rick.Lumpkin@noaa.gov [mailto:rick.lumpkin@noaa.gov]

>> Sent: Thursday, October 18, 2012 12:29 PM

>> To: aoml.dftr@noaa.gov; Luca Centurioni

>> Subject: Fwd: New York Times piece

>>

>> FYI

>>

>> ----- Original Message -----

>> Subject: New York Times piece

>> Date: Thu, 18 Oct 2012 15:20:49 -0400

>> From: Jana Goldman<jana.goldman@noaa.gov>

>> To: Ciaran Clayton<ciaran.clayton@noaa.gov>, Scott Smullen

>> <scott.smullen@noaa.gov>, John Ewald<john.ewald@noaa.gov>, Erica Rule

>> <Erica.Rule@noaa.gov>, Rick Lumpkin<rick.lumpkin@noaa.gov>

>>

>>

>>

>>

<http://www.nytimes.com/2012/10/19/science/earth/iron-dumping-experimen>

t-

>> in-pacific-alarms-marine-experts.html

>>

>> --

>> Jana Goldman

>> Director

>> NOAA Communications @ NOAA Research

>> 1315 East West Highway

>> SSMC3 #11229

>> Silver Spring, MD 20910

>> 301-734-1123

>> jana.goldman@noaa.gov<mailto:jana.goldman@noaa.gov>

>