Dr. Suzanne Farley, Executive Editor
& Dr. Richard White, Chief Editor
Scientific Reports
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Dear Drs. Farley & White,

We are writing to draw your attention to several problems with a paper published in *Scientific Reports* in 2016 entitled "Unprecedented Disease-related Coral Mortality in Southeastern Florida" by Mr. William Precht and colleagues. Our concerns have to do with:

1. The failure of the paper to describe anthropogenic impacts relevant and concomitant to the disease outbreak;
2. The failure of the authors to declare and describe significant financial competing interests; and consequently
3. Pervasive issues regarding bias in, and transparency of, data analyses.

We believe these problems have introduced systematic bias into the data being used to describe the disease outbreak, and that this bias has been propagated to the datasets that the authors have made publicly available. Furthermore, problems with both data analyses and data availability make it impossible for others to reproduce the same findings and/or to test hypotheses regarding the origin and spread of the disease. As a result of this, we respectfully request that the paper by Precht *et al.* be retracted.

The paper by Precht *et al.* reports on a devastating episode of white plague disease that broke out in late 2014 off Miami's coastline and which, over the following 12 months, spread over a 130 km section of the Florida reef tract. It describes the incidence, etiology, and epidemiology of the disease, and suggests that the disease is "water-borne, infectious, and highly contagious". However, the paper fails to discuss a large-scale dredging operation to widen and deepen the Port of Miami channel that was taking place at the same time, just over 1 km away from the location that Precht *et al.* report as the epicenter of the disease outbreak. The failure to consider such a significant activity is particularly troubling since the authors (with the exception of R. van Woesik) are all employed by Dial Cordy and Associates (DCA), which is a subcontractor of the dredging company, Great Lakes Dredge and Dock. Their contracted role was to document the impacts of dredging activity at the Port of Miami. In fact, the site which they report as the epicenter of the disease outbreak was one of their southern "control" sites where corals were tagged for dredge impact monitoring.

Unfortunately, in reporting this outbreak of disease, the authors fail to include data from the majority of their reef monitoring locations -- and did not include any of their data from the monitoring sites adjacent to the channel being dredged. In fact, the study only includes 4 of 26 sites where the authors had tagged corals for monitoring. (The dataset also omits certain critical dates). These omissions make it impossible to test whether the dredging was a significant factor driving the outbreak and/or spread of the disease.

The competing financial interest policy for *Scientific Reports* is very clearly detailed[1], and we have included a copy of this policy (attached here- Appendix I) in which we have highlighted the areas where we believe this policy has been contravened in the case of Precht *et al.* (2016), who declared no competing financial interests. We believe that failing to describe extensive dredging activities in the vicinity of a disease outbreak that "is arguably one of the most lethal ever recorded on a contemporary coral reef" (from Precht *et al*. abstract), when combined with undisclosed financial competing interests, selective inclusion and omission of data, and obfuscation of the dataset in a way that hinders the testing of alternative hypotheses, represent an attempt to systematically overemphasize the apparent impact of the disease and to underreport the potential significance of dredging. These issues lead to fundamental concerns of validity that cannot be overcome through a simple addendum or correction.

As local reef biologists in SE Florida, we are naturally interested in the origins of the devastating outbreak of coral disease that has occurred on these reefs and how to predict and prevent these outbreaks in future dredging near coral reefs[2,3]. Given our utmost respect for *Scientific Reports'* competing financial interest policy, we would additionally like to disclose that we are also interested in this topic because it is the subject of ongoing litigation by several local environmental organizations, including Miami Waterkeeper (R. Silverstein is the Executive Director), who have sued the US Army Corps of Engineers (USACE) over the severe and widespread impacts of the Port of Miami dredge on coral resources in the area.

Federal, state, and county agencies who independently undertook coral condition surveys[4] at the Port of Miami concluded that corals were "buried under sediments,"[5] and that 95% of the impacted reef areas they surveyed were now "not functioning as recruitment habitat for corals, including staghorn corals."[6] The same federal agency (NOAA) also alleges that the monitoring reports from Dial Cordy and Associates (which include the same data upon which the Precht *et al.* study is founded), "selectively choose certain results to downplay the permanent effects of sedimentation to area corals" and that "coral disease is overemphasized as the singular cause of coral impact" (emphasis added).[7] It appears that these same biases have been translated to the article by Precht *et al.* in your journal.

We do not dispute the fact that the disease occurred or that this disease has now gone on to kill millions of corals over hundreds of miles of the Florida Reef Tract. This issue has drawn widespread public concern, media attention[8,9], and letters from United States Senators. With such a high profile issue, however, it is critical that the peer-reviewed literature on this topic is accurate. Dredging activities have been

[1] https://www.nature.com/srep/journal-policies/editorial-policies#competing
[2] See "An unhappy peace dividend" by Lizzie Wade in Science magazine: http://science.sciencemag.org/content/352/6282/129/tab-article-info
[3] For example, China is creating islands in the Spratly islands (South China Sea) by extensive dredge-and-fill operations in coral reef areas: https://www.npr.org/sections/parallels/2016/09/01/491395715/one-result-of-chinas-buildup-in-south-china-sea-environmental-havoc
[4] Copies of these reports can be provided upon request.
[5] Florida Department of Environmental Protection, 8 August 2014. "Field notes on impact assessment in Miami Harbor Phase III Federal Channel Expansion Permit # 0305721-001-BI" page 29.
[6] National Marine Fisheries Service, 12 April 2016. "Examination of Sedimentation Impacts to Coral Reef along the Port of Miami Entrance Channel, December 2015".
[7] NOAA (NMFS) letter to US Army Corps. 9 11 2015. Available upon request.
[8] Miami Herald article on coral disease outbreak: http://www.miamiherald.com/news/local/environment/article209447494.html
[9] Miami Herald article on USACE claiming that disease, not dredging, damaged reefs: http://www.miamiherald.com/news/local/environment/article57756768.html and Op Ed by A. Baker refuting this claim: http://www.miamiherald.com/opinion/letters-to-the-editor/article66775797.html

previously implicated in outbreaks of coral disease (*e.g.*, Pollock et al. 2014[10]), and so testing this hypothesis remains an important goal in describing the origin and dynamics of this disease outbreak.

In attempting to test this hypothesis, we recently contacted Mr. Precht to obtain the data for the study reported in your journal. We intended to independently verify the findings reported in the study, and also to test whether the dredge operations may have played a role in the outbreak of the disease. However, to our dismay, few of the quantitative findings reported in *Scientific Reports* agree with the data that we received from Mr. Precht. Moreover, they vary from data he made available to state agencies as part of compliance monitoring, which we obtained as part of a public records request. After several weeks of inquiring and attempting to duplicate the findings represented in the paper, it is now apparent that the dataset provided is rife with omissions and errors and that the analyses lack transparency. In fact, the data themselves have been extensively changed and presented in ways not clearly described in the Methods section, to the extent that it is difficult to determine which quantitative conclusions can be relied on from the study. In an online summary report (see: http://jrcunning.github.io/pom-dredge/scirep/scirep_analysis.html), we describe, line-by-line, our attempt to replicate the findings reported. Our review suggests that the authors' data omissions and biased analyses may have fundamentally changed the apparent severity, lethality, location, and timing of the disease outbreak.

Thank you in advance for your swift consideration of these issues. We recognize that the authors might be encouraged to re-submit their findings for peer-review by your journal. If this is the case, we recommend that a new set of reviewers should be identified, that the dredging operations be recognized and analyzed, that financial competing interests be fully disclosed and described to reviewers (addressing the particular conflicts we highlighted in your policy), and that the data analyses, version control, and transparency issues (described in our online analysis) be corrected to the satisfaction of referees and editorial staff before any new or revised article is published.

In light of the concerns we outline here, we believe that the paper by Precht *et al.* fails to meet the standards that are the hallmarks of scientific research and which constitute your own publication's high standards and policies. This failure threatens the reputation of *Scientific Reports* and the *Nature* family of journals, because it implies that data can be selectively omitted, extensively filtered, further edited by hand, and distributed publicly in different versions which do not agree with each other, provided that the overall conclusion (in this case, that there was a massive disease outbreak) appears to be correct. Given this, we respectfully request that the current version of the paper by Precht *et al.* be retracted.

We remain available to answer any questions that you may have.

Sincerely,

[10] Pollock *et al.* (2014) PLoS One. https://doi.org/10.1371/journal.pone.0102498

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Our disclosures: Rachel Silverstein is the Executive Director and Waterkeeper of Miami Waterkeeper, a non-profit advocacy organization and a co-plaintiff in ongoing Endangered Species Act litigation regarding coral impacts during the dredging of the Port of Miami and Port Everglades. Andrew Baker and Rachel Silverstein submitted affidavits in federal court in 2014 on behalf of plaintiffs in the dredging litigation. Baker and Silverstein have written in *The Miami Herald* and other outlets regarding regional coral damage following Port of Miami dredging. Silverstein and Cunning are former Ph.D. students of Baker and received their doctoral degrees from the University of Miami's Rosenstiel School of Marine and Atmospheric Science in 2012 and 2013, respectively.