

Reef Alarmists Jump The Shark

by Walter Starck
October 9, 2012

The Great Barrier Reef is doomed again. A recent widely publicised scientific [study](#) reports the dramatic finding that it has lost half its coral in the last 27 years. Forty-eight percent of the loss is attributed to storm damage, with bleaching and crown-of-thorns starfish being responsible for 10% and 42% respectively. The average annual rate of coral loss over the 27-year period was estimated to be 3.38% and growth was put at 2.85%, leaving a net decline of 0.53% per year. Further effort and research on starfish control is suggested to be the most promising means of reversing the decline. Elimination of the loss due to starfish would leave a net gain of 0.89%.

While the news reports present the appearance of scientific precision and certainty, examination of the study itself reveals a number of doubtful assumptions, undisclosed conditions and instances where strong conflicting evidence is unmentioned. Examples of this include:

- The margin of error in visual surveys of coral cover is high and unassessed; yet, they are presented to hundredths of a percent without any qualifying explanation, as if they are precisely accurate. Coral cover is highly variable between reefs and over different areas or at different years on the same reef. Visual estimates of the percentage of coral cover can differ significantly, depending on where, when and by whom the observations were made. Also, many of the observers doing the surveys upon which this study is based were inexperienced students primed by learned expectations of threats to the reef.
- The reef is vast and in any given year surveys sample only a small portion. The reported sudden decline in coral cover in the last couple of years is almost certain to have been exaggerated by surveys made to assess the damage from severe cyclones crossing the reef in 2009 and 2011, with few or no surveys in unaffected areas in those years.
- The study states, “*Cyclone intensities are increasing with warming ocean temperatures....*”

This statement is unsubstantiated and contrary to available evidence. The most definitive recent studies find no increase in tropical cyclone frequency or intensity. On the GBR severe cyclone activity for the past century has also been well below the level for the preceding century. The study also states:

“The recent frequency and intensity of mass coral bleaching are of major concern, and are directly attributable to rising atmospheric greenhouse gases.”

No evidence exists for this claim. The mass-bleaching events of recent decades have coincided with surface water warming resulting from periods of extended calm associated with strong El Niño events. This impedes normal evaporative cooling as well as wave driven

mixing. There is no evidence of any increase in the frequency or strength of El Niño events, and climate models project increased wind speeds from warming, not more calms. The report further states:

“Water quality is a key environmental driver for the GBR. Central and southern rivers now carry five- to ninefold higher nutrient and sediment loads from cleared, fertilized, and urbanized catchments into the GBR compared with pre-European settlement.”

No actual measurements of pre-European sedimentation rates exist. These are only estimates and extrapolations from unverified proxies which may or may not represent what is claimed. What is certain is that the inshore areas of the GBR are heavily blanketed in sediments that have accumulated over thousands of years and turbidity in coastal waters is overwhelmingly governed by re-suspension of these sediments through wave action, not by current day runoff from the land.

The most widely cited study purporting to show a large increase in sedimentation after European settlement was based on an increase in barium in coral skeletons just after 60,000 head of cattle were introduced into the Burdekin area in 1870. This was attributed to an increase in erosion caused by the cattle. But this period also coincided with the ending of an extended period of extreme drought and no explanation has ever been offered for why the barium level has subsequently decreased despite the million head of cattle now in the same catchment.

The assumption that levels of turbidity in flood runoff events are almost entirely attributable to farming and grazing is unwarranted, and it is readily observable that runoff turbidity from crop and grazing areas is often markedly less than from undisturbed natural areas. Crops and grasses are simply better at retaining soil than is either the rainforest or open eucalypt woodland they have replaced. Sediment-trapping by dams and cessation of the widespread annual burning practiced by the pre-European inhabitants of the area can also be expected to have reduced sediment outflows.

There is good reason to expect that agriculture and grazing may well have resulted in a net *reduction* in levels of sediment discharge, compared to pre-European condition. The claims of multi-fold increases in sedimentation are simply speculation wrapped in techno-waffle and presented as fact.

As for nutrients from land, the total estimated annual runoff of fertiliser into the GBR lagoon would only amount to something in the order of one part in 150 million even if dumped into the lagoon at one time. However, the lagoon is continually being flushed by ocean currents every few weeks.

It is also worth noting that the estimated annual amount of nitrates and phosphates in runoff is about three times the amount used in agriculture after allowance is made for the amounts taken up by crops, oxidized into the atmosphere and bound up in insoluble form in the soil. In other words, even if the estimates are correct (which is doubtful) two-thirds or more would seem to actually derive from natural sources.

It is further worth noting that the high levels of nitrates and phosphates reported from river water occur in the dry season when the river flow almost ceases and the only runoff is from the forest covered headwaters, not the farmed areas lower down. When the rains come and farm runoff begins, the nutrient level falls steeply and is diluted much further when it reaches the sea. The modestly increased level off the river mouths is quickly taken up by plankton. It disappears within a few kilometres, and tens of kilometres from the reef itself.

On the other hand, natural nutrient fluxes from internal waves along the outer barrier regularly produce orders of magnitude greater nutrient increases than any runoff from land and no one is concerned about that. In fact, it's thought to be beneficial.

By far the most toxic, damaging and easy to demonstrate detriment to corals from runoff is the fresh water itself. Still another false statement is that,

“Global warming is also increasing rainfall variability resulting in more frequent intense drought-breaking floods that carry particularly high nutrient and sediment loads.”

Major Queensland floods were, in fact, far more frequent and intense in the 19th century than they have been in the past century.

The claim is made that, *“Reducing COTS (crown of thorns starfish) populations, by improving water quality and developing alternative control measures, could prevent further coral decline and improve the outlook for the Great Barrier Reef.”*

This is entirely supposition, and the actual result could well be the opposite. After nearly half a century and over a hundred million dollars in research, the COTS outbreaks are no better understood, nor are they any more of a threat, than they ever were. They continue to occur sporadically as they do with other starfishes and sea urchins in many other places. Such outbreaks also often occur on isolated oceanic reefs far from any runoff or human influence.

There is nothing to indicate the GBR outbreaks are due to anything other than natural causes. In fact they may even play a beneficial role in the maintenance of coral diversity as the starfish selectively prune the fast growing branching and plate-like species permitting the slower growing forms to catch up. This is especially noticeable a few years after severe storm damage, when the faster growing species tend to predominate and when COTS outbreaks are likely to occur.

The report concludes that, *“...coral cover on the GBR is consistently declining, and without intervention, it will likely fall to 5–10% within the next 10 [years].”*

Interestingly, this particular claim is conflicted by the most comprehensive previous study (published only three years earlier by the same institution) which, *“...found no evidence of consistent, system-wide decline in coral cover since 1995.”*

If the experts were wrong then is there any reason to think they are right now?

Perhaps the claim most likely to raise an eyebrow is the declaration that, *“The authors declare no conflict of interest.”*

All the authors have in fact been beneficiaries of generous research grants to study purported environmental threats to the GBR and are almost certain to receive future funding should their recommendations for further such research be implemented. While there is nothing improper about this situation, to formally declare there is no conflict of interest will strike some as making a farce of the declaration and even the very concept.

Is this just another appeal for funding?

There is abundant reason to question the validity of the findings. The imminent demise of the GBR has been an ongoing claim for nearly half a century and has funded a small industry of researchers, bureaucrats and activists devoted to “saving” the Great Barrier Reef from a

variety of imagined “threats”. In recent decades this industry has cost the Australian taxpayer well over \$100 million per year and the cost has been increasing. Although no practical solutions have ever been found, the demand for hypothetical solutions to imaginary problems seems unlimited.

If this situation were based on a conscious deliberate fraud, it would be bad enough; but, unfortunately it involves something even worse. It arises from a widespread and profound groupthink belief that the reef really is under dire threat and that all the money and effort is actually “saving” it from destruction. Even so, this latest study has implications well beyond just another appeal for funding and deserves to be given serious consideration.

What if for once the experts are right?

The core claim is that the reef has lost half of its coral in the past 27 years and that

“Without significant changes to the rates of disturbance and coral growth, coral cover in the central and southern regions of the GBR is likely to decline to 5–10% by 2022.”

If this is true, the implications for future research and management are profound. It means that the current condition of the GBR is essentially no better than that of the heavily exploited and effectively unmanaged reefs of the Caribbean or SE Asia. It means all the money and effort that has gone into management and research has been an abject failure. It means that the promised “resilience” to environmental impacts that was the major justification for greatly expanded green zones and sundry other stringent and costly restrictions on productive usage have achieved nothing, and that the vaunted resilience has been just another theoretical academic fantasy. It means that the claims of having the best managed reefs in the world have been only a self-serving delusion. It means that all the past assertions of successful management have been untrue and the research supposedly supporting it has been either grossly incompetent or a deliberate misrepresentation.

Worse still, this all took place when, for nearly three decades the reef, was supposedly dying off in clear view of all the experts and they even had the surveys to confirm it. Were they too slack to look at their data until now or did they hide it because it didn’t suit their agenda at the time? If they were that incompetent or dishonest in the past, why should we believe them now?

The high cost of providing a permanent reef holiday

Between the Great Barrier Reef Marine Park Authority, the Australian Institute of Marine Science, James Cook University, the Australian Research Council Centre of Excellence for Coral Reef Studies, Queensland Fisheries and the Reef Rescue Program, public expenditure on saving the GBR now totals almost \$200 million per year. In the private sector the cost of compliance is comparable or even greater. Much greater still is the ongoing costs and constraints on production, profitability and future development across all primary industries.

Australia now faces a developing economic crisis that may well become the most serious in our history. We have the most expensive housing, rapidly rising food prices and smallest manufacturing sector of any OECD nation. The resource boom that has sustained our prosperity appears to be deflating, and serious economic problems elsewhere mean recovery is more likely to take years than months. There are numerous other more real and important needs for our reduced government revenue than maintaining a few hundred bureaucrats and academics on a permanent Barrier Reef holiday.

If the reef alarmists are right, any “resilience” the reef may have had in the past has not been enough to prevent the loss of half the coral. Now, with even less resilience and an accelerating rate of alleged coral loss, the reef is clearly doomed and we need to face that fact. Continuing to throw massive resources into the ocean to maintain a pretence of “saving” it is both futile and stupid. The reef needs to be put on palliative care with major reductions in expenditure on management and research while maintaining only a modest effort to monitor any further changes in condition.

On the other hand, if the whole business of threats to the reef has simply been grossly exaggerated then it is also time to end the charade. In addition to rent-seekers there is abundant evidence of a variety of other unhealthy influences being involved as well. These include media sensationalism, political pandering for green votes, postmodern scientific corruption, “noble cause” corruption, ill-informed eco-evangelism and bureaucratic empire building.

Jumping the Reef Shark

In 1977, after several years of high ratings, the popular U.S. TV sitcom *Happy Days* was losing viewers. To recapture audience attention the writers came up with the idea of having the star, Fonzie, jump a shark on water skis. Since then “jumping the shark” has come to refer to desperate but somewhat silly stunts to regenerate interest in a fading brand, product or activity. It seems that with the level of eco-threats becoming so inflated by climate-change hype, the reef-threat industry has been losing popular interest to the climate catastrophists. However, jumping the shark by ratcheting up the reef threat to the level of imminent demise of the GBR looks desperate, not very credible and likely to entail substantial unintended consequences. Certainly it raises a serious doubt about the actual quality of any expertise involved.

To give credit where due, though, reef alarmists have at least managed the extraordinary feat of jumping the shark while shooting themselves in the foot at the same time.

Regardless of the reef-salvation industry’s motives, its efforts can only be viewed as either honest but incompetent or duplicitous and self-serving. It is time to severely cut the funding for this elaborate and costly farce. By their own reckoning the reef saviours have failed miserably and we can no longer afford them.

Personally, I suspect that the surest way to save the reef would be to cut funding for management and research by half and link future cuts or increases to the balance of economic and environmental outcomes. I have little doubt that would soon effect a miraculous recovery.

=====

References

Anon.

2008. Tropical cyclones down under. World Climate Report.

<http://www.worldclimatereport.com/index.php/2008/05/29/tropical-cyclones-down-under/>

UNDATED. Known floods in the Brisbane & Bremer river basin including the cities of Brisbane and Ipswich. http://www.bom.gov.au/hydro/flood/qld/fld_history/brisbane_history.shtml

- De'ath, G., K. Fabricus, H. Sweatman, M. Puotinen
2012. The 27-year decline of coral cover on the Great Barrier Reef and its causes. *PNAS Early Edition*, www.pnas.org/cgi/doi/10.1073/pnas.1208909109, pp 1-5
- Franks, S.
2006. Multi-decadal climate variability: Flood and Drought - New South Wales.
<http://www.lavoisier.com.au/articles/greenhouse-science/weather/Franks2007.pdf>
- Micevski, T., S. Franks, G. Kuczera
2006. Multidecadal variability in coastal eastern Australian flood data. *J. of Hydrology*. **327**, Issues 1–2, 30 July 2006, pp 219–225
- Nott, J.
2003. Intensity of prehistoric tropical cyclones. *J. of Geophysical Research* **108**(D7):5-1 to 5-11
- Nott, J., M. Hayne
2001. High frequency of 'super-cyclones' along the Great Barrier Reef over the past 5,000 years. *Nature* **413** 4 October 2001. pp 508-511
- Osborne, K., A. Dolman, S. Burgess, K. Johns
2011. Disturbance and the dynamics of coral cover on the Great Barrier Reef (1995–2009). *PLoS ONE* **6** (3): pp 1-10
- Pulsford, J.S.
1993. Historical nutrient usage in coastal Queensland river catchments adjacent to the Great Barrier Reef Marine Park. *Great Barrier Reef Marine Park Authority Research Publication No.40*, pp iv+63
- Starck, W.
2005. Threats to the Great Barrier Reef. IPA Backgrounder. **17**(1): pp 1-21
<http://www.goldendolphin.com/WSarticles/IPABackgrounder17-1.pdf>
2006. Coral Bleaching & the reef. <http://www.goldendolphin.com/WSarticles/bleaching.pdf>
- Sweatman, S., S. Delean, C. Syms
2011. Assessing loss of coral cover on Australia's Great Barrier Reef over two decades, with implications for longer-term trends, *Coral Reefs* **30**(2): pp 521-531