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Environment

Fishy Science on the Great Barrier Reef

Walter Starck

The rise of environmentalism as a socio-political movement has brought about a fundamental shift in values and activity across a range of scientific disciplines. Fisheries, forestry, wildlife management, ecology, systematics, marine biology and indeed the whole spectrum of field biology and environmental disciplines have been strongly affected. Climatology itself has become virtually synonymous with catastrophic anthropogenic climate change.

Before the ascendancy of environmentalism, the scientific ideal was an objective, evidence-based, value-neutral search for truth. Basic research, aimed only at better understanding the world in which we live, was pursued with considerable success. Over recent decades, however, basic research in natural history has been largely supplanted by studies predicated on environmental concerns. As a consequence, acquisition of new understanding of the nature and functioning of the natural world has declined. In addition, much of the research into purported environmental problems suffers from bias and distortion arising from adherence to faith-based notions of environmental correctness.

This shift in emphasis from basic research to environmentalism began innocuously in the 1960s and 1970s when an expanding scientific community began to outgrow its funding, and competition for research grants became stronger. At the same time, government was also coming to realise that scientific research was a black hole that could devour any amount of funding and always be hungry for more. Moreover, much of the research appeared to be highly esoteric with little prospect of ever yielding anything of practical or even intellectual value. Governments started to demand a greater consideration of utility.

For those schooled in the ideal of basic research, finding practical relevance was not always easy. Coincidentally, environmental concerns were on the rise in public awareness and were gaining political traction. Grant-seekers found that with a little imagination some environmental aspect could be suggested to attend to the basic research one actually wanted to pursue. Initially this worked to advantage; but competition soon demanded something stronger. Grant applications began to shift their focus to environmental concerns themselves with basic research receiving diminishing attention.

An environmental problem suitable for grant-seeking is not as easy to find as it might seem. It needs to be one that has credibility as a problem or, better still, public perception as being one. It also needs to be one that is not already over-subscribed by competing researchers. It further needs to appear both solvable and important enough to warrant considerable expense to do so. Preferably it should be something that involves a human cause, as this not only makes it amenable to correction but provides a dimension of moral rectitude as well. The moral aspect always goes down well politically and makes any criticism look shabby.

Just any old problem won’t do. Most are too hard, too unimportant or too uncertain to attract significant research funding. This limitation was met by manufacturing new ones. An early

and highly successful effort in eco-threat manufacture here in Australia was the great crown-of-thorns starfish plague.

Population explosions of the coral-eating crown-of-thorns starfish on the Great Barrier Reef first came to scientific and public attention in the late 1960s. The starfish threat was soon deemed by academic "experts" to be unprecedented, even though earlier scientific research and underwater exploration on the reef which might have found any earlier outbreaks were almost non-existent. Once a few such outbreaks had been found, the "problem" was deemed to be on a scale which threatened the entire reef. It was even predicted that unless something was done (that is, generous funding for research) the reef would be killed and then wash away, causing massive coastal erosion as well.

When it was discovered that the triton's trumpet shell was a natural predator of the crown-of-thorns starfish, it was immediately concluded that shell collectors were to blame for the starfish outbreaks. That trumpet shells are never abundant enough anywhere to control an outbreak of starfish and most of the reefs involved had never been subjected to shell collecting was ignored.

Although a geologist found good evidence for ongoing earlier crown-of-thorns outbreaks in the form of varying amounts of their distinctive skeletal elements at different levels in the reef sediments, this too was simply ignored. As far as the crown-of-thorns bandwagon was concerned, the science was quickly settled: the starfish plague had to be unprecedented and somehow caused by humans. All that was needed to solve the problem was more funding for research.

Following the initial burst of publicity, crown-of-thorns starfish population outbreaks were soon reported from places all across the tropical Indian and Pacific Oceans, from East Africa to Panama. No correlation with any human activity has ever been found, nor should it be expected. Starfishes and sea urchins produce hundreds of thousands, even millions of eggs per individual. Their larvae have extended periods of early development while drifting as plankton. Small variations in predation, temperature, currents and other oceanic conditions can result in large differences in the numbers that reach a particular area in a given year. Large population fluctuations in these creatures are natural and common.

Despite all the dire predictions, crown-of-thorns starfish population fluctuations continue to come and go on reefs, and infested reefs invariably recover within a few years. In fact, it is probable that starfish outbreaks play a beneficial role in promoting coral diversity. Every year, tropical cyclones cross the Great Barrier Reef and leave wide trails of massive coral destruction. Intense rain and bleaching events also devastate shallow reefs at erratic intervals. After a few years, the fastest growing corals have repopulated such areas. These branching and plate-like species can then form dense thickets which overshadow the slower growing, more massive species and prevent them from recovering. The former, however, are the preferred food of the crown-of-thorns starfish. When an outbreak occurs, the starfish thin out the faster growing species and give the slower ones a chance to re-establish.

Over the years tens of millions of dollars have been spent researching the crown-of-thorns starfish; but despite determined efforts, no credible human causation has ever been found. The latest such theory almost inevitably has involved computer modelling to link crown-of-thorns starfish larval survival to increased nutrients reputed to come from farm runoff. Computer modelling is a current fad in science. It is only as valid as our knowledge of the amount and effects of all relevant factors. In the case of the crown-of-thorns starfish, we

know so little that the model is largely hypothetical. In reality, it demonstrates only what we already know, which is that small changes in larval survival can produce big differences in population density. Even if nutrients were shown to be involved, there is no evidence for what portion (if any) derives from farm runoff and there are numerous records of crown-of-thorns starfish outbreaks on isolated oceanic reefs where runoff could not be a factor.

The Great Barrier Reef is a national icon and the success of the starfish threat in releasing government purse strings founded a substantial new industry for the region. "Saving" the reef from various purported threats has continued for almost half a century. This has entailed a total expenditure in the hundreds of millions of dollars with no real threat ever being confirmed and, of course, no solution ever being found. As old threats lose credibility and public concern fades, new ones always seem to be found.

Following the starfish plague, overfishing became a major concern. This generated more millions in research and culminated in the creation of a vast complicated array of green zones comprising about a third of the entire region where the already highly restricted fishing activity is prohibited entirely. While there is voluminous evidence to refute the existence of a threat from overfishing, just one fact alone demonstrates the utter absurdity of this claim.

The World Resource Institute is a conservation NGO which produces a global coral reef status report every few years. It is to reefs what the IPCC is to climate. Its survey is produced by contributing researchers from the various regions covered.

Its latest survey, published earlier this year, states that well-managed reefs can sustain a fisheries harvest rate of fifteen metric tonnes per square kilometre per year. The line fishery for the Great Barrier Reef is limited by law to a total catch of 3061 tonnes per year, which amounts to an average harvest rate of *nine kilograms* per square kilometre per year. That's right: 15,000 kilograms is sustainable globally but, according to our experts, nine kilograms is the most the Great Barrier Reef can produce. You can't be too careful when you're saving the reef.
As a result of what is risibly deemed to be the best available science, fishing is now so restricted that locally caught seafood cannot even meet the demand from the relatively small population in the region and locally caught reef fish is so scarce it sells for prices in the range of $25 to $50 per kilogram. The local supply is so inadequate that most of the fish consumed locally comes from elsewhere.

Over nearly three decades the Great Barrier Reef Marine Park Authority (GBRMPA) has spent millions of dollars on research involving underwater surveys of the populations of the major commercial species of reef fishes. This information comprises the most extensive body of knowledge on reef fish populations anywhere. Remarkably, it exists only in the form of unpublished reports in the GBRMPA library. These surveys reveal a high degree of variability in the populations both from reef to reef and over time on the same reefs. Most importantly, they find little or no statistically significant differences between reefs which are fished and those where fishing is prohibited. This is not surprising in view of the low level of fishing on the Great Barrier Reef. However, the good news that there is no threat from overfishing does not suit the GBRMPA and the reef salvation industry. Their budgets, and indeed their very reason for existence, have come to be centred on saving the reef from threats, and the idea that any of the threats might not be real is unthinkable. Despite the massive effort and cost of the surveys, they show the opposite of what is wanted by the salvationists and so have not been published.

Similar clear evidence exists that sundry other purported threats to the Great Barrier Reef have no basis in reality and that it is in fact in a near pristine natural condition. Not surprisingly, the excellent condition of the Great Barrier Reef is only admitted by the reef saviours in the context of attributing this to their own research and management while seeking further funding.

By the last years of the twentieth century the environmental movement along with its attendant eco-salvationist research industry and various eco-bureaucracies were strongly established and thriving; but they were beginning to outgrow the threats which had nurtured their previous growth. Just when it was needed, global warming, the mother of all environmental threats, was discovered. As it started to gain public recognition all the key socio-economic sectors quickly began to join in. Politicians, bureaucrats, activists, academics, the media, business, entertainment and NGOs all signed up wholesale for a place on the global-warming bandwagon. To borrow a line from an old song, "My God how the money rolled in." In research alone the global total has been somewhere north of $100 billion. In business and finance trillions were in the offing.

The result has been a mass mania which lasted a decade before the bubble broke when public conviction turned to doubt in the face of savage cold spells, a financial crisis and the revelation of systemic corruption in climate science which came to be known as Climategate.

Although a large majority of the electorate have now decided the whole climate alarm is either nonsense or greatly exaggerated or at best uncertain, there still remains a minority of true believers too deeply committed to even consider the possibility they might have been wrong. With such people conflicting evidence can never be convincing enough to make them question belief. Overwhelming contrary evidence is only a test of faith to be passed, and the maintenance of belief against all reason is a great virtue. They console themselves with the view that what was revealed in Climategate is only an excusable academic spat which has no bearing on the science itself.

In reality Climategate marks a tipping point when a decisive majority of the public began to question the credibility of the science. In the midst of what seemed to be a final dash to global victory the wheels started to come off the climate bandwagon and it tumbled into a quagmire of discredit and declining political support. The response by alarmists of trying to hype the threat even more has only further discredited them in the public eye. Fool me once, shame on you; fool me twice, shame on me. Few people will resume faith once it is lost.

On the mainstream news media websites public comments on climate alarmist news reports are now running four or five to one against the alarmism. Many are quite savage in their rejection.

Environmentalism has seriously damaged scientific research as well as the credibility of science among the public. The diversion of research effort away from seeking fundamental new understanding about the world and towards the production of evidence to support political agendas has seriously affected the development of new knowledge. It has also fostered an atmosphere wherein evidence is selected, distorted, suppressed and occasionally fabricated to accord with what is perceived to be an environmentally correct perspective. Worse yet, many scientists have come to accept such dishonesty and even view it as righteous if it is in support of what is deemed to be a higher good.

Formal courses in the philosophy and ethics of science are not normally a part of scientific training. These things have simply been assumed to be absorbed from the research culture. Unfortunately, the ethos now being absorbed is a badly corrupted one. Most of the current generation of young scientists come from a system in which the traditional ideals of basic research and intellectual honesty have been displaced by research aimed at producing support for political agendas.

For a scientist to speak out against the widespread misconduct that has developed is, at the least, to invite strong disapproval from one's peers. Almost certainly it would be highly detrimental to obtaining research funding, approval for publication and career advancement. Most researchers simply raise no objections and accept what is happening. Even if not guilty of any overt misconduct of their own, they are complicit in the prevailing dishonesty. Worse yet, the suppression of critical thinking has resulted in the creation of environmentally correct beliefs which are unquestionable but which incorporate fundamentally incorrect understandings of the real world.

Science has been badly corrupted and scientists are no longer to be trusted just because they are scientists. The only immediate solution is to go back to the basics of the scientific method. Claims of authority and expert consensus, personal degradation of dissenting opinion, and pissing contests over credentials aren't good enough. Show us the evidence. If it can't be produced or does not support the claims being made, funding should be cut off.

In the longer term several additional reforms would be valuable. One would be to make the formal study of the philosophy and ethics of science a part of scientific training. A clear and commonly held understanding of what is proper and what is unacceptable is essential to any effective standards of conduct. A further improvement would be an independent scientific ombudsman resourced to investigate credible allegations of scientific misconduct. Where major funding is allocated for particular kinds of research or where findings are controversial a scientific equivalent of a grand jury should be empowered to review and investigate findings. An additional area of important reform involves peer review, which is now subject to capture and misuse by in-groups promoting and protecting their own position. The internet makes easily possible a far more transparent and honest peer review process.

In the meantime it would be prudent to regard any claims attributed to scientists as you would those made by a used car salesman, politician, telemarketer or anyone else trying to sell you something. Don't be impressed by the soothsaying, proclamations of authority, techno-babble and eco-waffle or the chorus of researchers singing for their supper. Insist on answers to questions and to seeing the evidence—not just a selection, all of it.

Until the questions are answered and the evidence is examined in detail, don't buy. You don't have to commit to an opinion on everything that comes up. Reserving your opinion until you are well informed about a matter is far better than having one that is poorly informed and wrong. In short, the best way to avoid being fooled is to be a sceptic.

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