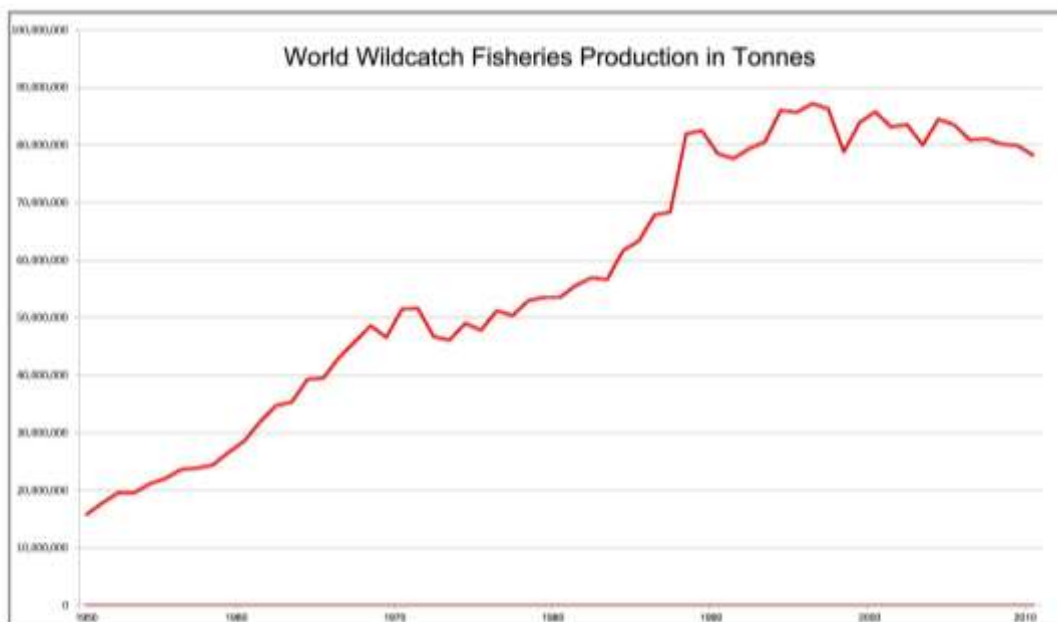


Are Fisheries or Science in decline?

Walter Starck

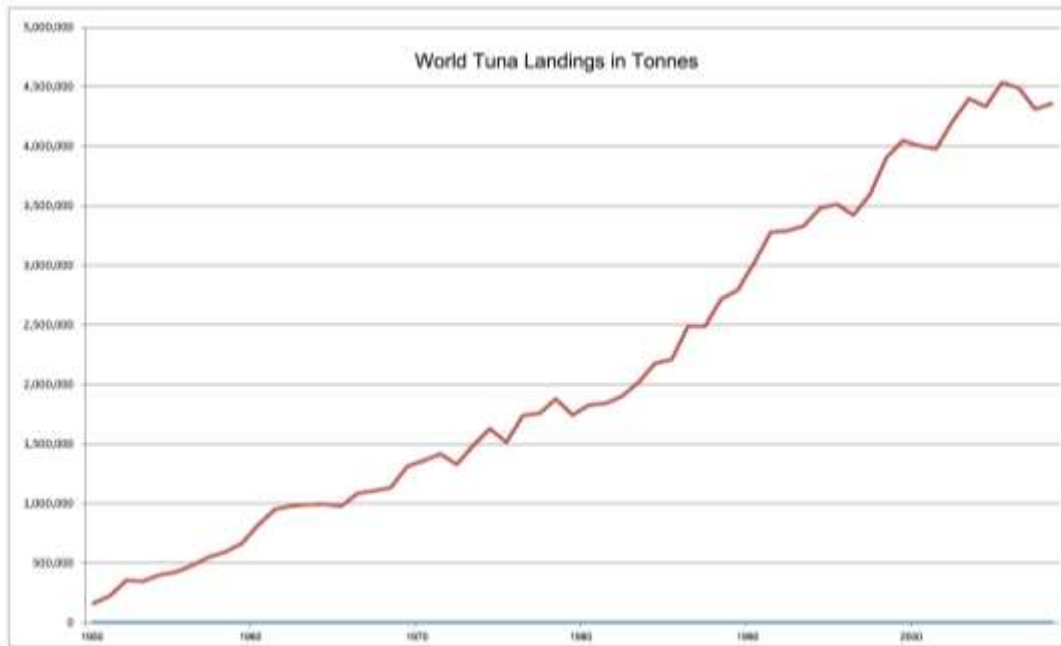
(From a talk given at the [Australian Environment Foundation](#) Annual Conference, Sydney, October 20, 2012.)

News stories, government reports, environmental NGOs and even the most august scientific journals all inform us that marine fisheries are threatened by widespread and severe overfishing. However, catch statistics and other empirical evidence present a somewhat different picture. Between 1950 and 1990 the global wild caught marine fisheries production increased fairly steadily from around 16 million tonnes to about 80 million tonnes. Since then for two decades it has fluctuated between 78 and 88 million tonnes.

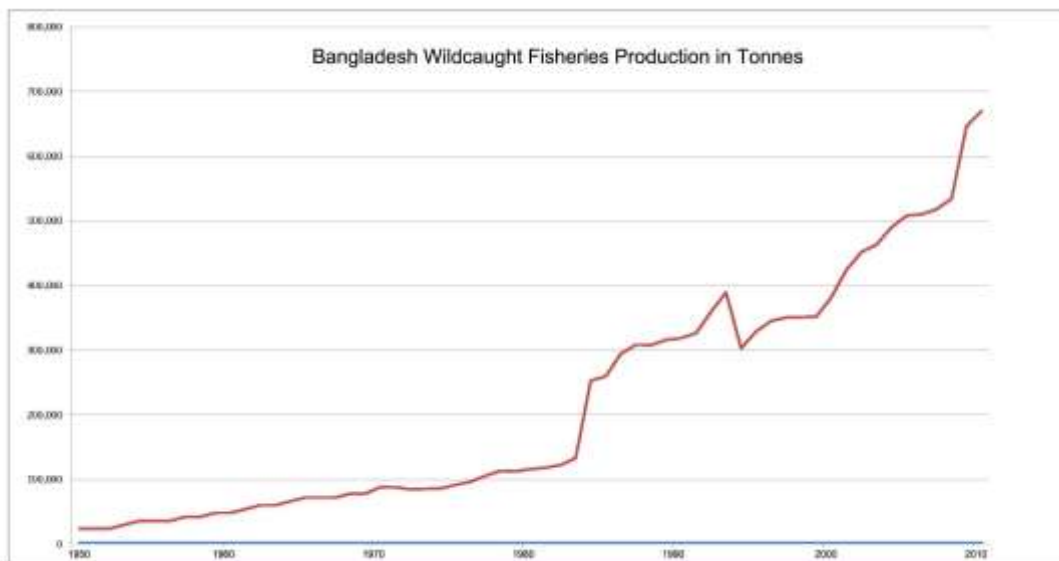


Surely if fisheries were in major decline from overfishing, it should be expected that the most severely overfished stocks would have to be showing a strong decline in catches after 20 years of alleged over exploitation.

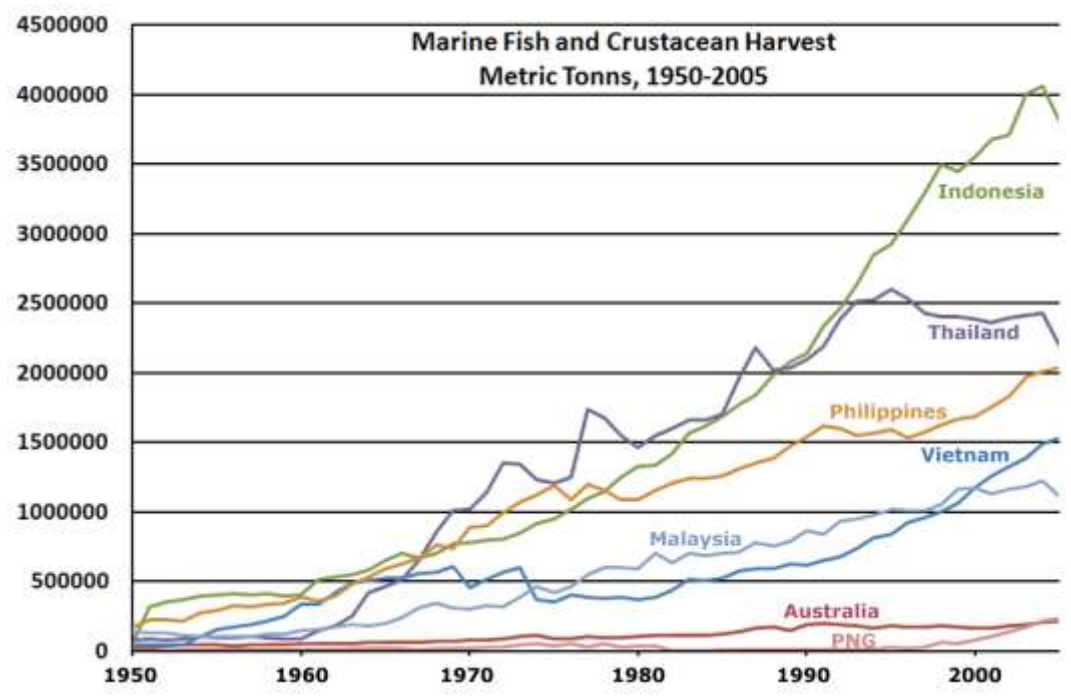
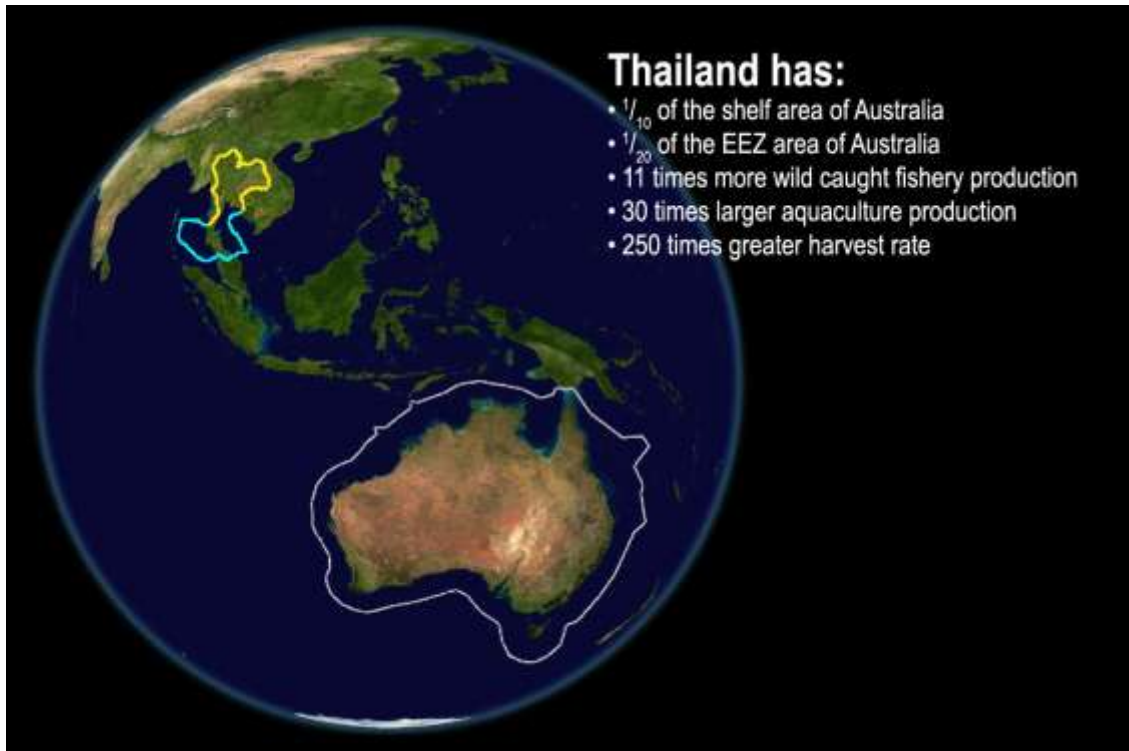
Tuna fisheries are the most widespread, valuable and heavily exploited of oceanic fish stocks. Widely cited studies published in both of the world's most prestigious scientific journals have estimated that current populations of tunas and other top oceanic predators have been reduced by overfishing to only 10% of their abundance in the 1950s. The global catch in 1950 was 163,000 t. It increased rather steadily to a peak in 2005 of 4.5 million t and was 4.4 million t in 2008, the most recent year for which statistics are available. It is difficult to imagine how such large catches continue to be made if only 10% of stocks remain. It is also difficult to understand how the spotter aircraft used in commercial tuna fishing continue to see large numbers of feeding shoals far above the levels expected if the stocks were depleted by 90%.



A similar discrepancy is apparent if one looks at the catches from the most heavily exploited national fisheries. Bangladesh has what is probably the most heavily exploited of all national fisheries. Their catch increases from 24,000 t in 1950 to 670,000t in 2010, the most recent year for which statistics are available. Australia has an EEZ area over 80 times larger and a total catch only about 1/3 as large. Our harvest per unit of area is about 38 Kg/Km². That of Bangladesh is over 8,000 Kg/Km² or about 225 times larger than Australia. This is not so unbelievable. Even at that level, it actually only comes to about 80 Kg/Ha which is still well below the meat producing capacity of good grazing land and only half of the average sustainable harvest rate for coral reef fisheries.



Thailand is another nation whose fisheries are among the most heavily exploited in the world. Their annual catch increased from 124,000t in 1950 to a peak of 2.8 million tonnes in 1995 and remained above 2.3 million tonnes for the next decade. It has recently declined to about 1.5 million tonnes; but, this has been attributed to economic effects of the GFC combined with high costs of fuel for many small fishers, not declining stocks. Thailand has an EEZ area 1/20 the size of Australia's. They supply one-quarter of our seafood imports and we rely on imports for 70% of our consumption. This adds some \$1.7 billion annually to our chronic trade deficit.



Despite decades of alarmist claims about the parlous state of fisheries the global catch as well as that of the most heavily exploited stocks and the most heavily fished waters all show no signs of significant widespread decline. Fisheries are robust resources. They are not fragile or delicate. With few exceptions they have huge reproductive capacity, grow rapidly and are highly efficient at converting their food into growth. Nowhere, ever, has any species of marine fish or invertebrate been exterminated by fishing. It has the lowest impact on nature of any means of food production. While some overfishing is occurring this is more of a matter of managing for improved economic efficiency than it is of saving endangered species or of trying to avert some ecological disaster.

From basic research to environmentalism

Could all the experts and all the high powered science simply be wrong? The short answer is, yes. To understand how the science departed from reality we need to go back a bit. Following the major contributions of science to the Allied victory in the Second World War and further stimulated by Cold War competition, science enjoyed an era of generous government support. Marine science in particular experienced a major boom. It was a time of expansion, enthusiasm and discovery. Basic research and new understanding were highly valued and sought after.

By the 1980s, however, growth of government and resultant budgetary demands began to tighten up on the funding of a greatly expanded research community. Obtaining support for research started to become noticeably more competitive and governments began to demand practical results. For a great deal of biological studies, especially field studies, this was not easy to do. Fortuitously, the nascent environmental movement was attracting increasing public attention to environmental threats. Researchers soon found that suggesting some relevance to an environmental threat greatly increased the probability of funding approval. Better yet, the threat itself didn't have to be demonstrably real. It could just be a hypothetical possibility.

The environment quickly became one of those feel good issues. Like patriotism, motherhood and meat pies nobody, especially no politician, could dare to question or oppose it. Politically it was also a cheap shot. It was popular, looked virtuous and entailed little direct cost or risk. However, once a justification is suggested, no matter how hypothetical it might be in the beginning, if it is accepted by others and funding provided, the commitment becomes a lot firmer. This grows even stronger should questions or criticism arise and it has to be defended. When funding is provided to study a problem the only thing certain to not be found is that there wasn't one.

Enter the postmodern era

The post-war boom in the sciences inspired efforts in other academic disciplines to become more scientific in their approach to research. Though successful in some instances, two major problems were encountered. One involved the difficulty of applying an objective, analytical, evidence-based approach to much of the subject matter. The other, even bigger, problem was that if this was done the result often failed to support the established system of beliefs.

With careers, reputations and indeed the very credibility of whole disciplines at stake, the social science establishment responded by rejecting the fundamental validity of the scientific method. Objectivity was argued to be an impossible delusion, reality only a subjective illusion and any evidence is subordinate to inarguable higher truths known by consensus to all right thinking people. This view came to be termed post modernism and the canon of beliefs it espouses as being

unquestionable is referred to as political correctness. In it, truth is entirely subjective and there is no objective reality. There is only my truth or your truth and the only valid distinction in value resides in the matter of moral correctness, not in reason and evidence.

The keystone to postmodern political correctness is an assumption of moral authority accompanied by certitude and righteousness. Any doubt, questioning or disagreement is seen not as just misinformed but as *prima facie* evidence of conscious and deliberate wrong-doing. This emphasis on moral superiority results in political correctness being focused on matters perceived to be of high moral certainty and value. Issues involving equality, fairness, health, safety and the environment predominate.

After the collapse of communism, and with a majority of workers in capitalist economies enjoying middle class affluence, concern about the plight of downtrodden workers lost much of its moral appeal. Concern about the birds and the bees and the air and water was ideally suited to become the new moral façade for much the same mindset of discontented non-producers as had formerly gathered under the banner of socialism. However, the underlying agenda remained the same, *i.e.* restrict, tax and punish anyone more industrious, self-disciplined or successful than themselves.

The practice vs. the philosophy of science

In the normal course of scientific education there is little or no formal study of the philosophy and ethics of science. These are something one is expected to automatically absorb from one's surrounds and that is indeed what has happened. In the absence of any clear understanding of the philosophy of science, young scientists have absorbed a great deal of the postmodern thinking which has come to prevail in the modern academic environment.

The ongoing result of these trends in academia and in scientific research has been the near abandonment of basic research in the environmental sciences. Research aimed at better understanding of our world has been largely supplanted by agenda driven research aimed at providing scientific authority to support green political issues. In doing so the values and ethics on which science has been so successfully founded have been sadly corrupted by the widespread adoption in the scientific community of the values and ethics of postmodern political correctness. In particular this has involved abandonment of the search for objective truth and to instead rely upon authority and a consensus of expert opinion. Along with this has come the notion of a higher truth based on moralistic beliefs and which take precedence over mere empirical evidence. Such a noble cause then not just excuses the violation of any lesser ethics but in fact demands it.

Adding to the postmodern corruption of science and stemming in part from the nexus of science, postmodernism and environmentalism has been the development of something called post normal science. This has been defined as being, "*...a methodology of inquiry that is appropriate for cases where facts are uncertain, values in dispute, stakes high and decisions urgent.*"

A corollary of this has been the establishment of a dictate known as the precautionary principle. Although originally formulated to recommend preventative measures be taken in instances where there is scientific uncertainty but a credible threat of serious or irreversible environmental harm exists. This has been twisted by environmentalism to demand that any hypothetical possibility of environmental detriment must be addressed by full measures to prevent it. Unfortunately this

interpretation makes no reference to probability, cost, or risks and it offers a ready cloak for sundry other agendas. In fact, it would even seem to preclude itself as everything we do or don't do entails risk, including precautionary measures themselves. Amazingly, this vacuous and pernicious bit of nonsense has even been written into the enabling legislation for the Australian Fisheries Management Authority.

Parallels between fisheries and climate science

The result of all this for fisheries science in many respects closely parallels what has occurred in climate science. In both cases:

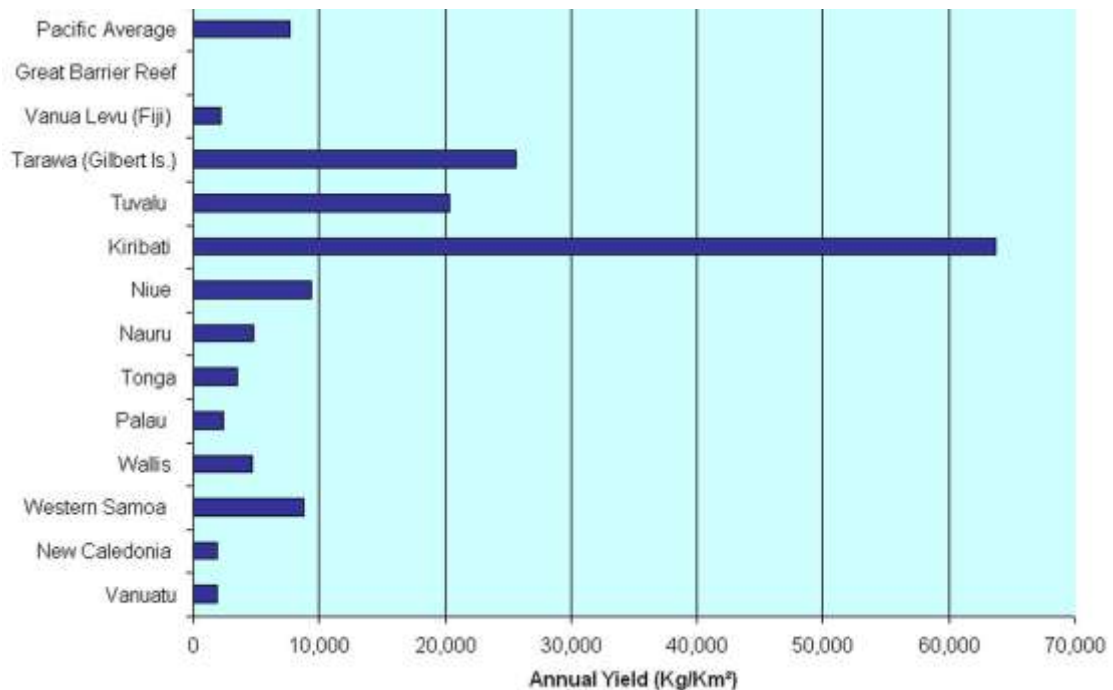
- An immanent environmental crisis is predicted.
- Unverified highly uncertain computer modelling is presented as being compelling scientific proof.
- High levels of confidence are proclaimed devoid of any mathematical assessment of probability.
- Supporting data is subjected to high levels of selection and adjustment employing undisclosed methods.
- Independent examination of materials and methods is blocked by claims of confidentiality.
- Personal denigration is employed to discredit conflicting opinion while ignoring the substance of any opposing argument.
- Peer review is misused to suppress publication of conflicting findings.
- Conflicting evidence is freely ignored, misrepresented, dismissed and not disclosed.
- Self-awarded proclamations of expertise and scientific excellence are employed to bolster authority.
- False claims of an overwhelming consensus of experts are used to dismiss any criticism as coming only from a fringe minority of ignorant extremists.
- False claims of high level expertise and scientific certainty are made when the science is actually highly uncertain and the self-proclaimed "experts" are in fact third rate academics whose professional reputation rests entirely on dubious alarmist claims.
- Natural fluctuations well within the bounds of historical variability are presented as unprecedented and clear evidence of detrimental anthropogenic impacts.
- When scientific misconduct in pursuit of the eco-agenda is exposed, the response of advocates is not to condemn it but to seek to trivialise, excuse or justify it.

All this has taken place in an atmosphere of great import, urgency and righteousness, but with minimal regard for costs or consequences and none at all for any impacts there may be on human lives.

Theatre of the Absurd

The condition of fisheries management in Australia today has more in common with the theatre of the absurd than it does with any genuine science. Witness a few examples:

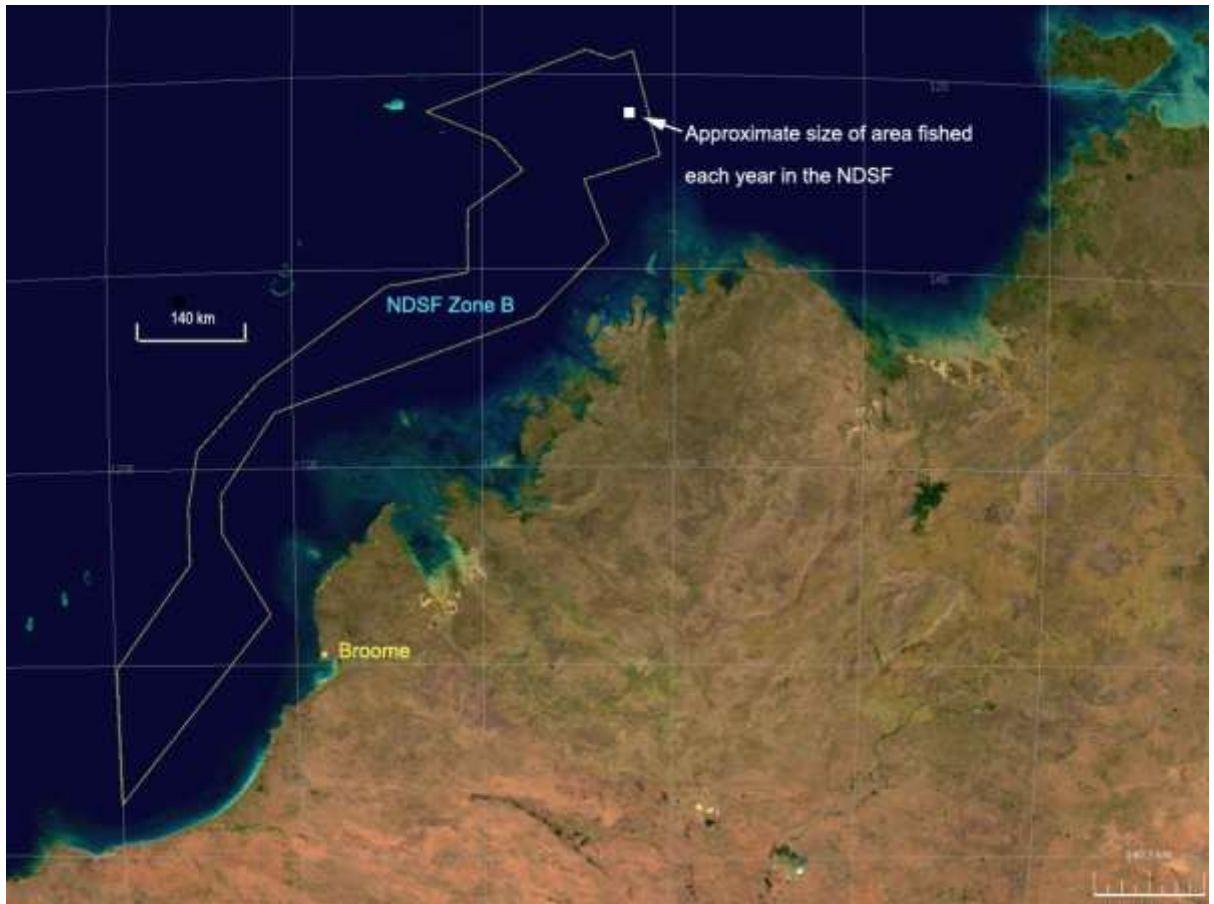
- Australia has by far the largest fishing zone area per capita and lowest harvest rate of any nation.
- 70% of domestic seafood consumption is supplied by imports. All come from far more heavily exploited resources elsewhere. They are paid for by selling off non-renewable mineral resources and this is deemed to be sustainable management.
- The latest (2011) global coral reef status report published by the World Resource Institute states that well managed reefs can sustain a harvest rate of 15,000 Kg/Km²/yr. (*i.e.* 150 Kg/Ha) The maximum harvest rate permitted for the Great Barrier Reef amounts to 9 Kg/Km²/yr, (*i.e.* 90 grams per Ha). At a harvest rate of less 1/10 of 1% of the sustainable average for reefs elsewhere the reef "experts" tell us that the GBR is "threatened" by overfishing and a complex morass of restrictions has been created to address this problem.



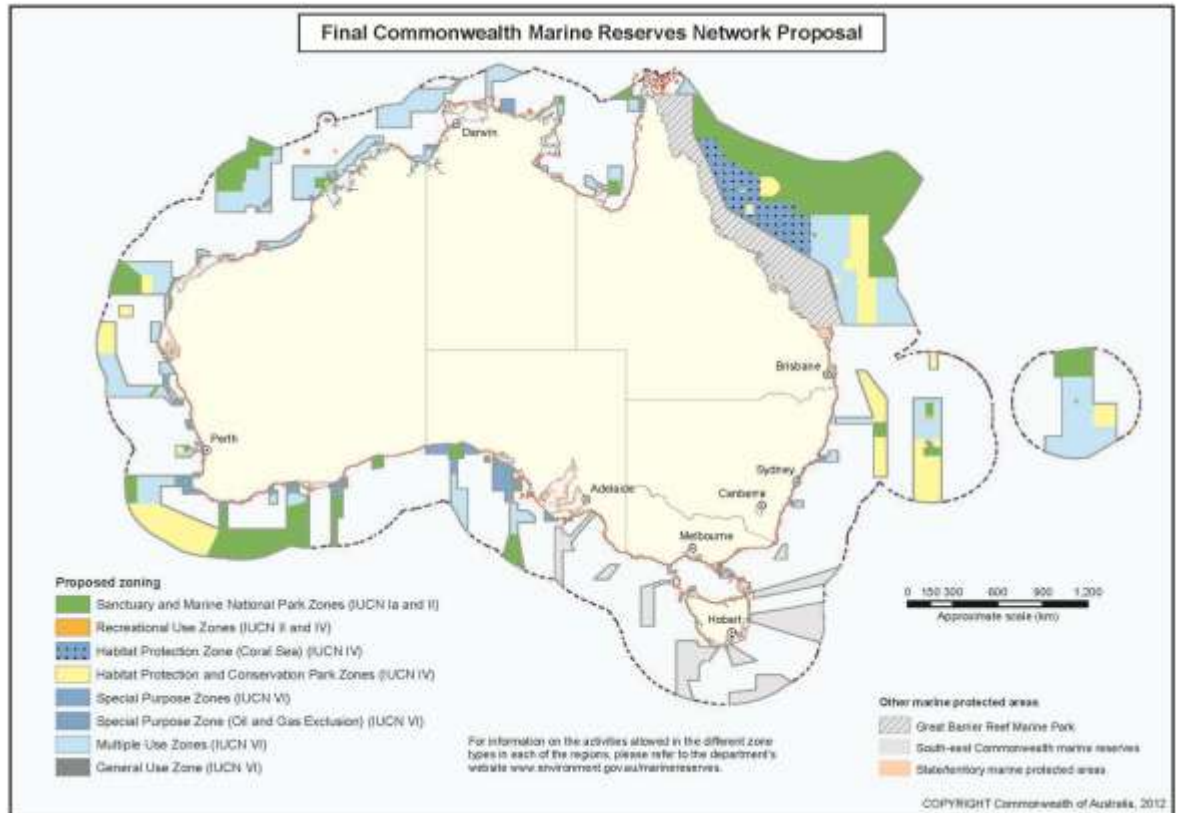
Harvest rates for various Pacific reef fisheries. The Great Barrier Reef rate is too small to appear at the scale required to depict that of other reef areas.

- In the 1980s a fleet of large Taiwanese pair trawlers were licensed to operate on the NW Shelf of WA. Based on a widespread sample of over 25,000 hours of trawling using 100 metre wide pair trawls, they estimated a sustainable annual yield of 250,000 tonnes of demersal fish. This is a bit more than the current total wild catch of all Australian fisheries. Today the same area is fished by a small trap fishery (Northern Demersal Scalefish Fishery) limited to 6 boats with a fishing ground of over 200,000 Km² or about 30,000 Km² per boat. With the number of boats, traps and fishing days permitted it would take some 500 years to

fish the main grounds just one time and there are still larger areas both inshore and offshore that are not being fished at all. Based on computer modelling by office based bureaucrats a thousand Km away in Perth, a maximum catch of 800 t is imposed on the fishery. In two decades of management by remote control the managers have never even visited the actual fishery.



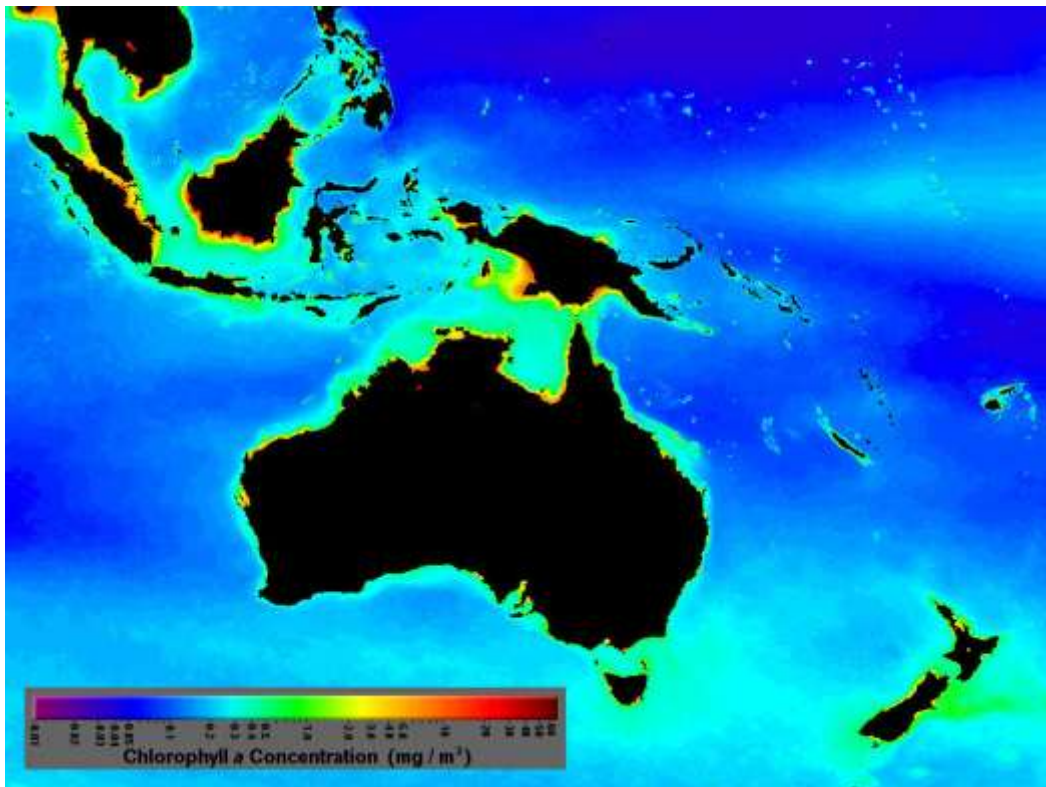
- In a number of the smaller fisheries in Australia management costs exceed the GDP of the fishery. It would be more economic if management was abolished and the fishermen were paid their gross earnings to do nothing.
- One frequently sees reference to "*...our outstanding record in sustainable fisheries.*" This is highly misleading. It is true only for the resource, not for the industry. Resource sustainability alone is a no-brainer. All that is necessary for this purpose is to impose severe restrictions on usage. Restricting grazing to one beast per 1000 Ha would certainly be sustainable. It would also be moronic.
- Australia already has about 25% of total global Marine Protected Area. The Coral Sea and other planned expansions will then comprise about half of the global total. Having most of the world's MPA area where it is least needed does nothing to preserve marine biodiversity. It will, however, entail a large ongoing cost to "manage" and will present a major impediment to the development of any productive use of the resource.



- The proposed Coral Sea MPA would be the world's largest. It would also be the most ill-advised because:
 1. Most Coral Sea islands and reefs are already protected as national parks.
 2. The few small existing Coral Sea fisheries are already subject to highly restrictive AFMA management.
 3. The existing GBR National Park already affords protection of all Coral Sea species and biotopes in the world's largest coral reef MPA.
 4. The Coral Sea is one of the world's prime tuna fishing grounds. We now produce a few hundred tonnes from the Coral Sea where previously Japanese fishermen had sustainably produced around 30,000 tonnes annually for many years. Meanwhile PNG licenses Asian fishing companies to fish the same migratory stocks in their waters. They currently catch about 750,000 tonnes while all our tuna fisheries in total are only allowed to catch about 15,000 tonnes. We then import some \$165 million annually in canned tuna. We "save" our fish for Asian fishermen to catch and then sell back to us.
- Over recent years numerous large scale clinical and epidemiological studies published in the world's leading medical journals have found significant health benefits from increased seafood consumption for a broad range of neurological, cardio-vascular and immune related conditions. In particular it affords significant reductions in obesity, heart disease, depression, aggression and age related mental deterioration. It is also important in mental development and functioning in children. Translated into reduced health care costs, it could save Australia billions of dollars annually in addition to a hugely better quality of life for millions of individuals. We should be looking at how

to expand our underutilised fisheries and aquaculture potentials, not seeking to find more imaginary reasons to close them down. Imposing more and more restrictions on our fisheries is quite literally contributing to national stupidity and ill health.

- Management which delivers only decreasing production and profitability at ever increasing cost is a travesty of the very concept of management. In this regard Australian fisheries management is arguably the world's worst.
- Until a few years ago low natural productivity of Australian waters was not even mentioned in regard to fisheries. It became a convenient explanation only after I pointed out in public debate that claims of widespread threats from overfishing were grossly inconsistent with a harvest rate that is only about 3% of the global average and less than half of 1% that of Thailand, our biggest supplier of imports. Suddenly, an inexplicable black hole in oceanic productivity was declared and the Commonwealth Minister announced that “... *Australia is in the middle of, you might say, a fish desert.*” Strangely, oceanographic science seems never before to have noted this remarkable phenomenon until it was needed to explain dubious claims of overfishing despite only tiny harvest rates.
- I then pointed out that global marine primary productivity measurements from satellite monitoring showed no unusually low productivity around Australia. Amazingly, the initial response to this was a claim that the most productive fisheries are on the continental shelves and we had only a small shelf area. This argument was equally uninformed because Australia has the second largest shelf area of any nation. We have about 10 times the shelf area and much higher primary productivity than our nearest neighbours N.Z. or PNG but less than half the fisheries catch of either.



- The shelf area nonsense was also quickly shelved and the claim then became that the productivity figures were only averages and a large area of exceptionally high productivity in the north meant that the productivity of most of our waters was very low. This argument is just as ill-founded and smacks of desperation. Productivity everywhere varies widely with time and place, and ours is not in any way unusual in this respect, nor is it even particularly low at its lowest. It also raises a further question regarding the absence of any major fisheries associated with the area of highest productivity.
- If, indeed, Australian waters were so poor it would be obvious to anyone with experience elsewhere and would be reflected in a very low catch per unit of effort. On the contrary, above average abundance is clearly apparent. If the fish in our waters were as few as is being claimed they would literally have to come from miles around to dive into fishermen nets and traps or onto hooks to account for the rates at which they are caught.

The ill-informed and shifting arguments used to defend the idea of a meagre over-exploited resource make it clear that there is no genuine scientific basis for the claims being made. The lack of interest in and even angry rejection of good evidence to the contrary also makes it apparent that the real agenda is not actually a concern for the resource but rather the pursuit of other aims for which environmental concerns provide a convenient moral and pseudo-scientific cloak.

Management Malaise

Competent management seeks to maximise sustainable use and in this regard Australian fisheries management may well be the world's most ineffective. It is grossly expensive in terms of cost per unit of production and for ever increasing annual budgets it has delivered only decreasing production and profitability. Calling this outstanding management is like calling a medical procedure successful if it treats the disease condition even if, as a side effect, it also kills the patient.

At present there is a big push toward ecosystem based fisheries management. This has little to do with better management or any benefit to the industry. On the contrary, it has everything to do with management repositioning themselves away from responsibility for the industry they have strangled and toward a much broader responsibility for the entire marine environment.

The current management approach is like trying to run a large business with:

- A chairman with no business experience
- A managing director who has never even seen the industry
- Middle management who applies theory by remote control, hundreds or thousands of kilometres removed from the activity for which they are responsible and rarely or never actually see.
- Middle and lower management with lifetime employment guaranteed, no bottom line accountability and generous superannuation.
- Shareholders who have no vote or voice in management

Not surprisingly, this novel approach to management hasn't produced high quality results.

Management Reform Required

Meaningful management reform would require:

- Accountability for results
- A much more empirical and hands on approach
- Recognition that fisheries are not fragile resources in some delicate balance requiring extreme caution. They are in fact robust resources subject to significant natural fluctuations and ability to recover if overfished.
- Recognition that ecology is above all holistic. Overprotection in one area only increases impacts elsewhere and fisheries have the least impact on nature of any means of food production.
- Majority representation for fishers on a board of directors overseeing management. This would not just mean sham "consultation" with sundry "stakeholders" including parties with nothing invested. To be meaningful it would also have to include the right to hire and fire management.

Unfortunately, too much now rests on delusions and deliberate untruths to make the radical reform required a practical prospect. A severe economic disruption seems the most likely outcome.

Most of the leading Western nations are now experiencing ageing populations, declining industries, chronic trade imbalances, bloated government, punitive taxation, high levels of personal debt, unsustainable government deficits and a rapidly metastasizing regulatory regime that is an increasing impediment to any productive activity. Environmental, health and safety issues have become major contributors to this malaise.

A recent Financial Times news item from the UK reports that some 3000 regulatory rules affecting small businesses had been scrapped in an effort to boost economic growth. While only the tip of the iceberg, hopefully, this glimmer of enlightenment may portend a reawakening of sanity without the necessity of a severe economic crash to more harshly impose it.