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SUBMISSION to the ENVIRONMENTAL IMPACT STATEMENT
FRESHWATER FISH STOCKING in NSW

This submission addresses the issue of stocking Bass in RIVERS only and the negative impact on the wild fishery. The comments do not apply to stocking impoundments.

Stocking is a simple “technological fix” that is popular among the recreational fishing fraternity. There is a widespread belief that hatchery supplementation compensates for habitat degradation, overfishing etc. Pouring fish into water makes people think everything is OK. It gives fishers a false sense of security and can make them complacent about overfishing and doing something about overcoming the perceived need to stock. From a management perspective the politics of it are very attractive because of this widespread acceptance.

What’s best for the recreational bass fishery is to put the highest value and top priority on supporting the wild populations. Hatchery fish are a very poor attempt to make up for losses amongst wild fish. A wild fishery provides a better recreational fishing experience in the short, medium or long term. What’s needed is patience to fix the problem that is perceived to need fish supplementation and only after exhaustive efforts should supplementation occur.

A CASE FOR A WILD BASS FISHERY
GENETICS

The EIS Overview acknowledges that existing information suggests that the current activity of fish stocking poses a risk to the genetic integrity of wild populations of native fish yet the ‘Response’ to the ‘Initial Risk’ seems mainly to address the better management of hatcheries.

I am reliably informed that hatchery adaptation readily occurs with first generation offspring of wild stock and that behavioural and physiological adaptation begins soon after hatching of this first generation young. They get fed, protected from predators, kept in uniform, favourable conditions, disease is prevented and they are constantly attended by people etc. They quickly become adapted to this easy life and each one is made increasingly unsuited to life in the wild. Deformed fish that would be quickly eliminated in the wild flourish in this artificial environment. The misfits inject unfavourable traits into the wild population, dilute favourable traits, and reduce beneficial genetic variability. Examples of undesirable mutations are showing up in stocked impoundments, the same source of stock that supplements rivers – examples – goldfish like fins in the Shoalhaven and split bottom jaws in Glenbawn, St Clair and Brogo Dams.

There’s this hatchery-conditioning kind of adaptation and there’s also the genetic kind where brood stock selection causes the adverse changes. Brood stock source and quantity is cause for concern. It is claimed that the three-zone system (the MacLeay and the Hawkesbury Rivers inclusive comprises the mid zone and the other two zones are N and S to the borders) is adequate and that bass have a “gentle incremental genetic shift down the coast as opposed to distinct catchment populations”. This gentle genetic shift and subtle adaptation shift up and down the coast surely could mean that where distance and environmental conditions are totally different that hybridisation between populations that have evolved over many thousands of years could produce a negative effect on some critical qualities and characteristics.

An assessment of the impact of mixing (hybridising) bass stocks in USA is a good example: -
Quote " *When Goldberg talks about creating outbreeding depression through the mixing of stocks, he's not referring to mixing northern and Florida bass. He's talking about interbreeding the "locally adapted population" of one watershed with that of another.... The notion that bass can differ significantly from watershed to watershed is foreign for most anglers. To them, a bass is a bass is a bass, and they have little patience for such distinctions.*

But Goldberg aligns himself with Dave Philipp of the Center (sic) for Aquatic Ecology at the Illinois Natural History Survey. Philipp long has maintained that mixing stocks negates the beneficial adaptations evolved over centuries for specific waters. Yes, he admits, "hybrid vigour" does produce bigger fish faster in some waters when Florida bass are introduced, but he believes long-term negatives outweigh short term-benefits.

Disrupting the genetics of locally adapted bass populations is a bad idea..."

((Tony Goldberg is a veterinarian and Assistant Professor in epidemiology and is working on the large mouth bass virus problem and Dave Philipp is a staff Scientist at Illinois Natural History Survey, the acknowledged premier natural history survey in USA with over 200 scientists on staff (web address www.inhs.uiuc.edu))

Also, when I raised the example, I am told that the European, Canadian and USA experience with the negatives of hatchery supplementation is not relevant because, quote "The impacts in North America and Europe you refer to are from massive consistent stockings". Yet I could easily find a number of scientific papers that conclude that one off stockings have a detrimental effect on wild fisheries such as; -
In one case the report is headed Hatcheries Change Salmonoids In One Generation- by Bill M. Bakke, Director, Native Fish Society (USA).

Another is titled " Divergence In First Generation Hatchery Fish" (Reisenbichler, R.R. 1994 in Pacific Salmon and their Ecosystems- Chapman Hall Inc -)

Quote "*Gene flow from hatchery fish is deleterious because hatchery populations adapt to the unnatural conditions of the hatchery environment at the expense of the adaptedness for living in natural streams. This domestication is significant even in the first generation of hatchery rearing*".

.Also Verspoor, Eric.1988-

Quote "Reduced genetic variability in first generation hatchery populations" published in Canada J. Fish. Aquat.Sci. Vol. 1988. This study concludes " *The observations are consistent with a loss of genetic variability in the hatchery salmon from random drift caused by using small numbers of salmon for brood stock*"

Another, Jonsson, Bror, and Ian. A, Fleming. 1993 - Enhancement of wild salmon populations. G. Sundnes ed. -Human Impact on Self-recruiting Populations -an international symposium.- Kongsvoll, Norway, Tapit Trondheim, Norway.

Quote "*...Thus, the use of supplementation to enhance populations should be carefully considered, even when only a single generation boost to a population seems warranted*".

Western Australia Fisheries Dept in - Management Directions for Western Australia's Recreational Fisheries - at 5.8 under Translocation and Restocking warn that caution should be exercised in supplementation because of the deleterious evidence coming out of Canada and the U.S.

I haven't checked any other state Fisheries Dept's policy on this issue so maybe WA's is a one off observation.

COMPETITION

Overstocking can be a problem when an assessment of a population is not undertaken. Assessments are not the norm presently when supplementation is approved.

It is claimed that when hatchery fish are stocked among wild fish and succeed in defending space and catching food, they reduce the availability of space and food for the wild population. Overcrowding with new fish having similar space and food needs can upset life in the confines of a stream

(Prof Ray J. White in How Hatcheries Harm Wild Fish – Part 1 – (Fly Fish America on Line))

PREDATORS

Large concentrations of hatchery fish attract predators like cormorants etc and thus raise the death rate of wild fish caught in the process and this also leads to a dilution of the wild fishery which otherwise would have remained relatively stable.

STOCKING ABOVE NATURAL BARRIERS

Applications to stock above natural barriers need closer scrutiny than appears to be the case now again in the interests of maintaining a wild fishery. Where these barriers occur in rivers bass have been moving to and from upper reaches for thousands of years such that as soon as conditions are right they will populate the stretch from their downstream numbers. Introducing hatchery bred fish that will also move with the right conditions means hybridisation of a population that has the adaptiveness with one that may not have that adaptiveness.

Low water flows at times are part of the natural environment of bass and they have adapted to them.

Patience is needed to wait for the right conditions otherwise we might as well declare that bass are a put-and-take species and stock them at the first sign of a problem.

Some examples drawn from personal knowledge, of wild fisheries being disadvantaged unnecessarily, are attached

In summary,

- The Overview acknowledges that questions still arise about the deleterious effect that supplementation of hatchery fish has on the wild fishery but in addressing the problem looks to tightening hatchery processes and procedures as the solution.
- The scientific evidence seems to agree that wild fish are much better adapted physiologically and behaviourally and are much better at such adaptation than are artificially raised fish.
- It also agrees that a wild fishery provides the best recreational fishing experience because of its superior quality fish and its ability to maintain itself under the conditions that it has adapted to over time provided appropriate management regimes are in place. It is concluded that supplementation should be the absolute last resort if at all.
- A concern is that unless strict management guidelines are put in place as a result of this EIS the wild bass fishery in rivers will continue to be compromised by the widespread acceptance and politically attractive practise of “stocking”. The funds that are now made available out of the dollar-for-dollar scheme would be better used to fund education instead of sending a message that it’s the right way to overcome perceived problems. It is said that whatever the problem the solution, above all, is education – education, education and more education to ensure that the message gets across that throwing fish at a problem is not good management, it is a last resort.
- Roderick Haig-Brown long ago summed it up “ Hatcheries are the easy way, the politically safe way. Dependence on hatcheries reduces the will to solve the real problems of natural production...”
- **One thing is for certain once compromised the wild bass fishery cannot be recovered**
- What we don’t want is for it to be said 10, 20 or so years down the track “that was a dumb thing ‘they’ did back then when they had an opportunity to get it right”.

EXAMPLES WHERE OFFICIAL STOCKING APPROVAL STIMULATED THE DETERIORATION OF VIABLE WILD FISHERIES

- 1 Prior to the advent of the dollar-for-dollar scheme successful efforts were made, with the assistance of Fisheries officers explaining the negatives, to convince local clubs that the funds they were raising to stock the Williams River would be better used on habitat etc improvements. Along came the dollar-for-dollar scheme and this was a signal that stocking was OK and not the problem they were led to believe it to be. Stocking took place without approval. This on a river that was the second venue for Basscatch then known as the Angling Catch Data Base (now the Angling Catch Research Programme). Here is a situation where data has been collected to measure the health of the bass fishery over the past 14 years being jeopardised by stocking, albeit illegal, stimulated by the perception that stocking does not pose problems for what was a great wild fishery. Of what value is that data now – very little I'd suggest. (As an aside a President of one of the local clubs confided that he did not believe that bass needed to access brackish water to breed as he has witnessed, on many occasions, multitudes of tiny bass way up in the upper reaches well beyond the natural rock bar at Mill Dam Falls and at the time bass were in the estuary spawning. It has been suggested by others that stock was being bought from a SE Qld breeder.)
 - 2 Same scenario Myall River – illegal stockings prior to dollar-for-dollar – don't know where the stock came from prior to d-f-d. Stocking momentum stimulated by official policy (d-f-d). Approved stocking eventually sourced from SE Qld after local breeder failed his attempts to raise beyond eyed ova.
- Question value of data collected at the Buladelah Bass Batch for future use.

EXAMPLES WHERE WILD POPULATIONS WERE JEOPARDISED BY STOCKING

Fisheries policy presently is that – quote- “ We only stock bass in rivers above fish barriers”.

1. Wyong River

A lot of effort, over a number of years, went into having a rock ramp fishway constructed. Yet years later approval was given to Wyong Council to access funds out of the dollar-for-dollar scheme to stock even though agreement was reached with the then Conservation Manager that pumping would cease for one week during Oct – Jan (initially Sept) each year and would be subject to ongoing assessment (Councils Ref. DM/DP W20/21200, Fisheries Ref. JH:JP 3882). This did not appear to have been assessed for its success or otherwise. In 1999 the river was stocked with a whole heap of fish more than likely sourced from the Hawkesbury River and thus this viable wild fishery was overwhelmed with hatchery fish. The objectives put forward by Council as reasons to stock do not appear to have been put to the test. I suspect (know) that there were other reasons. Here was a situation where a barrier to fish passage was overcome and a very viable wild fishery existed and now is jeopardised from reaching its full potential as a recreational fishery.

2. Ourimbah Creek

This little Creek has a viable bass population for eons but it has two weirs. The upper weir was constructed with a salmonid fishway many years ago while the lower weir of about 45cm headloss was rebuilt a few years back after the original had collapsed. For some reason Council did not provide for fish passage nor did Fisheries insist on it as required by the Fisheries Act. The response was always that funds were available for both weirs and that it would happen next financial year. But next year never came. Then there was approval to stock, twice, again out of the dollar-for-dollar scheme and the window of opportunity lost. There was this viable population that kept the river stocked in the lower section at every decent rain event and on occasions flooding provided stock above the upper weir. Now 40,000 hatchery fish from another catchment have inundated this small viable wild fishery.