Opinion

Is our inshore fishery sustainable?

By David Cook
Wonga Beach

A mate of mine was in a meeting on marine matters in Cairns recently when the Chair said that if he heard the word "sustainable" again he would crack up. He said different people imply different things when they use it and it had become just another overworked buzzword.

I could see where he was coming from – as a fisheries officer in Hong Kong in the 90's I observed an inshore fishery that some thought could keep on going for ever. It targeted abundant fast-growing, fast-maturing anchovies and sprats in nutrient rich coastal waters.

There was always plenty of these small pelagics. They bred so fast people just assumed the fishery would be sustainable. The catch was sold off the back of the boat direct to the mariculture industry and, until I came along, had slipped under the radar, never having been examined by the authorities.

The method was pair trawling, two boats towing a large net over muddy bottom in inshore waters. Interestingly, China did not permit that method in their adjacent coastal waters.

Fresh from working in the relatively pristine waters of PNG, I learned there were no detailed records of the recent catches from Territory waters. I suggested to my employers, the Department of Agriculture and Fisheries, maybe we should take a look at what the pair trawlers and indeed other boats in local waters were catching.

Just for a trial run, we boarded a pair-trawler as it completed hauling its net. We found they were using a 12 mm stretched mesh cod-end (bag at the end of the trawl net). They were catching just about everything in the water column from under two centimetres in length and larger.

I discovered the catch was not just small pelagics but also juveniles of bottom dwelling commercial species including bream, croaker, golden-thread and several others. This bycatch had never previously been examined. Naturally the mariculture people never complained about a little variety in the fish feed they bought.

So even if fishing the anchovies and sprats was sustainable, what was this method doing to numbers of larger fish in local inshore waters – if indeed there were any left? Where were the breeders, the parents of the fingerlings of commercial species I found in the bycatch?

A wonderful old book, published in 1940, found in our library archives, illustrates 8 fish species that were common in Hong Kong waters and the local markets at over three feet in length and several more which were common at over two feet.

It seemed a good idea to find out how these were surviving the pair trawl fishery.

I drew up a project to sample the commercial catches of all types of fishing vessels whilst they were fishing Hong Kong waters (*Oh to get out of the office!*). The good old Hong Kong Jockey Club came up with the funding so we bought a dinghy and got started.

My team of two Cantonese technicians and I burned around on a dinghy one day a week, over several months and went alongside or boarded a total of 105 fishing boats whilst they were actively fishing.

We recorded their commercial catches and interviewed the skippers. We covered small-scale gillnetters, handliners, longliners, and cage trappers mostly using dinghies and also boarded various larger trawlers.

We never encountered any fish over 50 cm in length in 105 commercial catches!

You'll find this hard to believe, but the more common species we sampled averaged out at lengths of around 10 to 15 cm – four to six inches in the old lingo. That included one species of grouper which we also get here in FNQ, the brown-barred rockcod.

This little lass is sexually mature in Hong Koog waters by one year old at around 10 cm in length and transforms to a bulky male before reaching 20 cm!

The 1940 Hong Kong fish book says that barramundi in local waters were "*any size up to 5 feet 6 inches*" whilst king threadfin "*reaches 6 ft*" and jewfish "*common size 3 to 4 feet*", a migratory mackerel was "common at 2 to 3 feet and reaches 5 feet".

Where were these fish? According to the fishermen we interviewed, the answer was simple – there just weren't any left. They had long since been fished out.

The skippers believed that any juveniles of the larger species, that were in the bycatch, must have drifted in on the current from nearby Chinese waters, where, you will recall, inshore pair trawling was not allowed.

The trawlermen were not particularly bothered by the presence of bycatch fingerlings, as they considered they had a "sustainable" fishery and were paid good money by the mariculture industry for anything they caught.

The small boats may also have had a "sustainable" fishery as they targeted those few small, fast maturing species such as rabbitfish, rockfish and brown-barred rockcod that abound in Hong Kong's nutrient rich waters along the rocky coastline, out of reach of trawlers.

The small boat owners made their money by delivering live, plate-sized fish (we are talking small plates here), in large numbers direct to selected restaurants or their nominated buyers.

Ours became the pilot study for a subsequent much larger one that indicated virtually all the large fish illustrated in the old book I found in the archives had become locally extinct throughout Hong Kong waters. Despite this, Hong Kong still had flourishing fisheries that appeared "sustainable" despite the absence of these previously preferred species.

My conclusion from that experience was that if you are going to describe whether a fishery is sustainable you need to include a description of what stock levels you wish to sustain.

In north Queensland, most of us who have fished in the same estuary or adjacent inshore waters over many years have witnessed an on-going decline in availability and sizes of our larger fish. Even a boom and bust in the case of grey mackerel.

Are we going to be satisfied with eventually just being able to catch bream, flathead and whiting? If not, we are going to have to make a real effort to halt and reverse the decline we are observing.

Last year at this time, just before the election, state politicians appeared to be listening to those of us who have been pointing this out for years.

They finally accepted there were too many gillnets in use. Overnight it became politically correct to recognise that the Queensland east coast inshore gillnet fishery was in trouble, and by implication, not operating "sustainably" (despite a recent assessment by the Feds in Canberra that it was).

So much public pressure had built up prior to the election that something had to be done. Authorities being in denial no longer cut the mustard: the pollies laid down the law and a gillnet buyback was announced.

LNP is currently proceeding with phase one of the gillnet buyback, but at the end of it all, and the expenditure of the $9 million allocated, will we have a sustainable inshore fishery? As we have just seen, that of course largely depends on what you mean by "sustainable".

It goes without saying that in NQ no-one wants any estuary or region to lose, like Hong Kong did, any of our key iconic species. After the current buyback of gillnets there will be no danger of that happening here, right?

Many of us beg to disagree. We have collated local observations up and down the coast and reviewed some recent scientific findings. We conclude that there will still be serious risks to some larger fish species in many areas unless significant changes are made to the east coast inshore fishery.

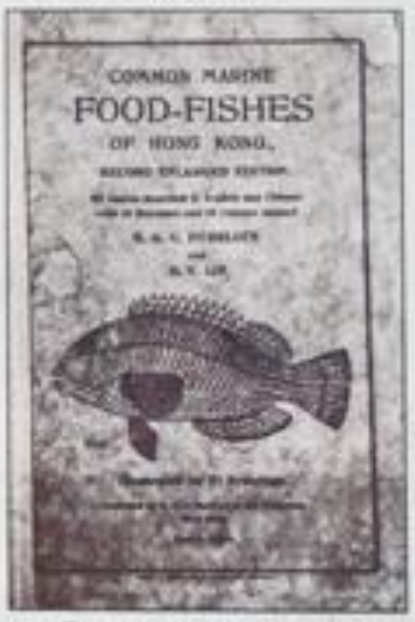
This is explained in more detail in our reports at: **http://www.ffic.org.au/Grey_Mackerel.html**. These outline significant risks to all our larger inshore species as a result of inadequate control of gillnetting. One of the more obvious is allowing unrestricted netting of spawning fish.

Local populations of threadfin, grey mackerel and fingermark and probably even barra and others will remain at risk after buyback of gillnets is complete unless a few important changes are made to the management of our inshore fishery.

We have recently written to the Hon. John McVeigh, Minister for DAFF to recommend 12 management changes. A copy can also be found on the above website.

Next month in *NQ Fish & Boat*, as a follow-up to what we have discussed here, we shall take a look at what the risks to fish stocks are under its current management. We shall also look at what needs to be done to ensure the fishery is set on a sound course towards sustainability at acceptable stock levels.

davecook@bigpond.com



The 1940 Hong Kong fish book.

Pair trawl catch examination from February 1997.

Opinion

A closer look at our inshore fishery

By David Cook
Wonga Beach

Last month I asked the question *"Is our inshore fishery sustainable?"* I was referring in particular to the east coast commercial gillnet fishery. Under present regulations and management, and given the failing health of our coastal ecosystems, I concluded that it was not.

I also noted that findings from recent studies suggest that gillnetting risks causing the further decline of at least some of our best-known inshore fish, possibly to the point of local extinction in some areas.

These conclusions do not imply that Queensland's gillnetters themselves are at fault in any way. Rather if there is any fault to assign, it lies squarely with the out-dated regulation and management of the fishery.

Once we put some important facts on the table it is fairly obvious that some big changes are necessary before the gillnet fishery could ever be properly certified as truly 'sustainable'.

This month I want to take a closer look at a number of issues on which I base these conclusions. I trust that gillnetters will recognize that most of these refer to matters beyond their control.

Sustainable Fisheries

As a bit of a teaser I did not define what I meant by 'sustainable fisheries' last month. If you look up the term you will find a number of definitions. For our purposes let's not get too bogged down with all the different definitions, but let's cut to the chase.

Basically a sustainable fishery is one where the numbers and sizes of the fish involved do not decline significantly over the years as a result of the fishing activities, the ecosystem and their components are not damaged because of the fishing, and it causes no other adverse impacts on current or future generations. Sure, there are still some shortcomings with this description, but I trust you get the picture.

I suggest all the issues I raise below do need to be adequately addressed by the authorities before the east coast gillnet fishery could be classified as sustainable by any competent, independent and non-government authority.

Issues

Who fishes where?

One of the most outstanding issues placing even the best-intentioned gillnetters between a rock and a hard place is that gillnetters can set their nets anywhere along the East Coast open to general gillnet fishing. This means that any attempt by local netters to look after local resources is pointless when out-of-towners can come in and take the lot.

As authorities have no way of managing who fishes where and how much, current regulations reward a *"take it before someone else does"* mentality. You can argue that this also may be the case when a number of local netters compete with each other whilst fishing the same area.

Biology

The authorities knew nothing about some critical aspects of the biology of inshore fish species when the current fisheries regulations were developed. Recent findings regarding the life cycles and movements of threadfin salmon and grey mackerel, for example, require a review of the regulations and the necessary changes made.

Whilst there are seasonal fishing closures to protect spawning reef fish, there are no closures, other than for barramundi, to protect other inshore species from gillnets whilst spawning. I personally cut open all four species pictured here and found them all to have developing roe, indicating spawning would have been **outside** of the barra closure.

As far as is known, each of our larger inshore species comes together to spawn in schools or 'runs' at predictable sites and times in inshore waters where they can easily be netted. It is during these times that they are at the greatest risk of being overfished by gillnets. After spawning, the schools may break up as individuals or smaller groups and spread out over much larger areas and so are more difficult to overfish.

There is nothing to stop all the gillnetters in Queensland turning up to fish a single spawning run for, say blue threadfin, and netting them to oblivion before they spawn.

That sadly is not even half the problem. To complicate matters, species such as grey mackerel and threadfin have recently been shown to live in separate (non-mixing) localised populations occurring at intervals along the East Coast.

As an example of how this comes about, neither king nor blue salmon appear to venture into clear water or over 'clean' sand or rock. This restricts their wanderings to particular estuary systems and adjacent muddy waters separated from other estuary systems by 'clean' sandy or rocky seabed.

Genetic studies have shown populations from separate estuary systems have been isolated from each other for probably thousands of years, indicating there is not even transfer of eggs or larval fish between them. For all we know, the same may be true for other inshore species such as grunter, tripletail, queenfish, fingermark and permit, none of which have received the same level of study.

If populations on spawning runs are 'netted-out' before they have had the chance to drop their eggs, their numbers will **not** be topped-up by immigration from other areas. This may lead to long-term local depletion and even extinction of that local population.

The collapse of the Bowen grey mackerel fishery on Reyward's Reef in the 1970's may well be the first recorded case of the commercial extinction of one such localised population. The apparent partial-collapse of the Douglas Region grey mackerel 2008 – 2010 could have been total collapse if the offshore netters had not heeded the local public outcry and left the fishery alone after the 2007 season.

The complication of fish stocks being made up of different, non-mixing and undefined regional populations turns into a Fisheries manager's nightmare when we learn that most individuals of key species such as barramundi and king threadfin do not become female until over 80 cm in length at over seven years of age.

The minimum legal sizes for these species, as well as for e.g. grey mackerel, are well below the size at first spawning – a big no-no in any fishery hoping to be described as sustainable.

It doesn't stop there. As we all know, different species mature at different sizes. Four inch gillnets are allowed in the fishery and are also used illegally. These can be expected to kill countless numbers of undersized larger species. Undersize threadfin, for example, die quickly in gillnets, usually before they can be released.

I'll never forget the day my family and I meshed about 200 fingerling queenfish when drag netting for bait – all died during or after their release. I've never used a drag net since. As juveniles of other larger species are also bound to die in quantities in both commercial bait nets and recreational drag nets, it is hardly surprising that many of our inshore species are in decline, even before we consider influences of changing environmental and ecosystem conditions.

Part-timers

As part-time commercial fishers may earn most of their income from other sources they can subsidise their fishing to a high risk level over the long-term. Cashed up from other work, they can afford to keep on netting when catches have fallen so low as to make it pointless for fulltime fishers to continue.

Some part-time fishers have also apparently earned a reputation for only 'pulse fishing' when the resource is most easily caught in good numbers, e.g. at the start of the barramundi season, when the stock may still be gathered near the mouths of estuaries, or when other fish are on spawning runs and therefore most vulnerable to overfishing.

Part-time gillnetters therefore also risk spoiling the fishery for full time fishers by taking the cream that would otherwise keep fulltime fishers going throughout the season, flooding the market with a glut of fish at peak seasons, resulting in reduced prices at such times.

Size of the fishery

In north Queensland our rivers are short and catchments small in comparison to the size of Australia simply because the mountains come fairly close to the coast in these parts. This translates into smaller nursery areas for juvenile fish and fewer large inshore fish in and around our estuaries in comparison to the much longer rivers, larger catchments and larger estuaries along much of Asia's more nutrient rich coastal waters.

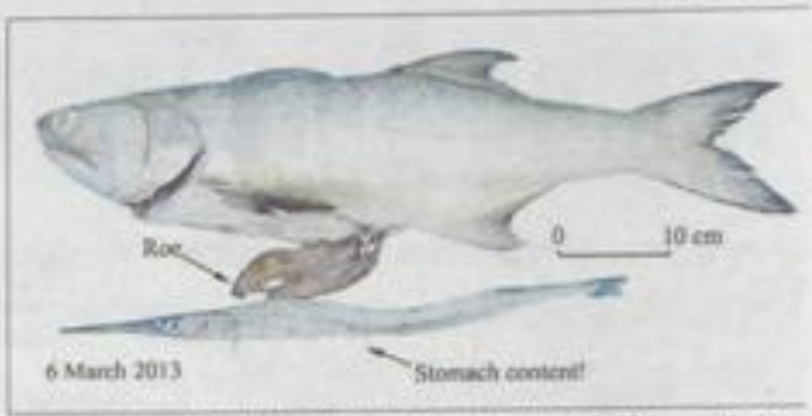
Whilst there may be an opportunity for a well-regulated, small-scale gillnet fishery in NQ, our inshore waters certainly do not appear to have the potential to sustain a medium-sized or industrial level gillnet fishery involving roving gillnetters moving up and down the East Coast in addition to the local netters.

Way forward

As you probably know, Fisheries Queensland is carrying out a buyback of gillnet endorsements and fishing licences with the aim of reducing gillnetting by around 50%. Even if this target is achieved, I doubt whether this fishery could be certified as genuinely sustainable until the fisheries regulations are amended to address the issues I have raised here.

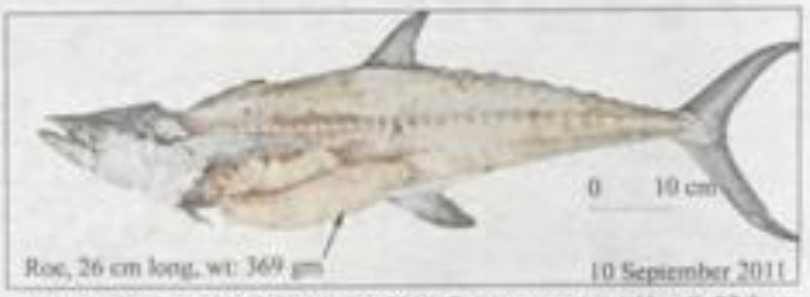
In next month's *NQ Fish & Boat* I hope to discuss what some of these changes should be and how they could benefit both those gillnetters who remain in the fishery after the buyback and also all you recreational fishers out there. Meanwhile if you have any problems with any of the above, do feel free to drop me an email.

David Cook
davecook@bigpond.com



Blue threadfin netted 4 March 2013, Daintree coast, total length 70.5 cm, with ripening roe. I opened the fish myself and the partly-digested 50 cm longtom was in the stomach, folded in four sections. Must have been some struggle to get that down!

A king threadfin netted 2 February 2013 on the Daintree coast, total length 82.5 cm, with ripening roe 12 cm in length. Individuals of this size are now a rare catch in these waters.



Grey mackerel caught 10 September 2011, Daintree coast, total length 97.5 cm with very large roe 26 cm in length, 369 gm in weight. This fish could probably have spawned within a week.