

Tell tale signs of overfishing in Sabah

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By Chok Sim Yee

If overfishing continues unchecked, we will not have seafood 40 years from now.

Professor Dr Saleem Mustafa, director of the Borneo Marine Research Institute (BMRI) at Universiti Malaysia Sabah (UMS), explained that overfishing is a condition that develops when excessive catches reduced the fish population to the extent that it could no longer support a commercial harvest.

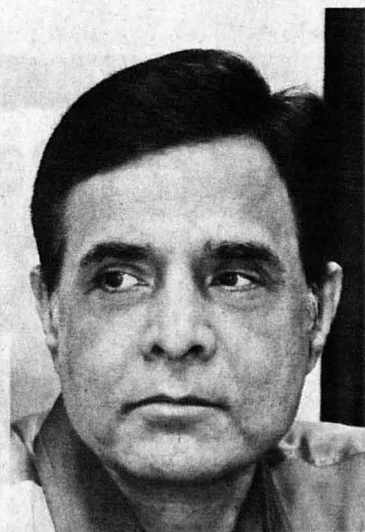
In a biological sense, it means that recruitment fails to compensate the fishing mortality. In other words, harvesting goes beyond the reproductive capacity of fish stock to replenish itself.

Overfishing is a serious issue as there are indicators in Sabah that show the effects, Saleem said.

Although the latest official statistics on fish population would only be released by the Fisheries Department next year, the figures would not be very promising, he said.

"Since 20 years ago, I have been going (to the fish market), and once in a while, I can see that the proportion of large size fish is declining, which is one clear indication that overfishing is taking place."

Other indicators of overfishing include change in catch composition



Saleem

and the skew in sex ratio, which can be seen in the case of groupers.

Saleem said groupers are born female and they will transform into males when they find enough males.

"So it is where the sex ratio is highly skewed more towards the female, and this has serious implications to the sustainable development of fisheries."

In recent reports in the media, Deputy Chief Minister Datuk Seri Panglima Yahya Hussin, who is also the Minister of Agriculture and Food Industry, revealed that Sabah's marine fish resources were depleting at a rate of about 15 per

cent every 10 years.

He said excessive commercial fishing, as well as the rampant use of dynamites and cyanide have resulted in the shrinking population of coastal fish in the State.

The volume of salt water fish landed has decreased from 207,213 tons in 1999 to 174,579 tons in 2010.

Statistics from the Fisheries Department Malaysia also showed that marine fish yield had decreased from 2.56 tons per square kilometer in 1971 to 0.21 tons per square kilometer in 2007.

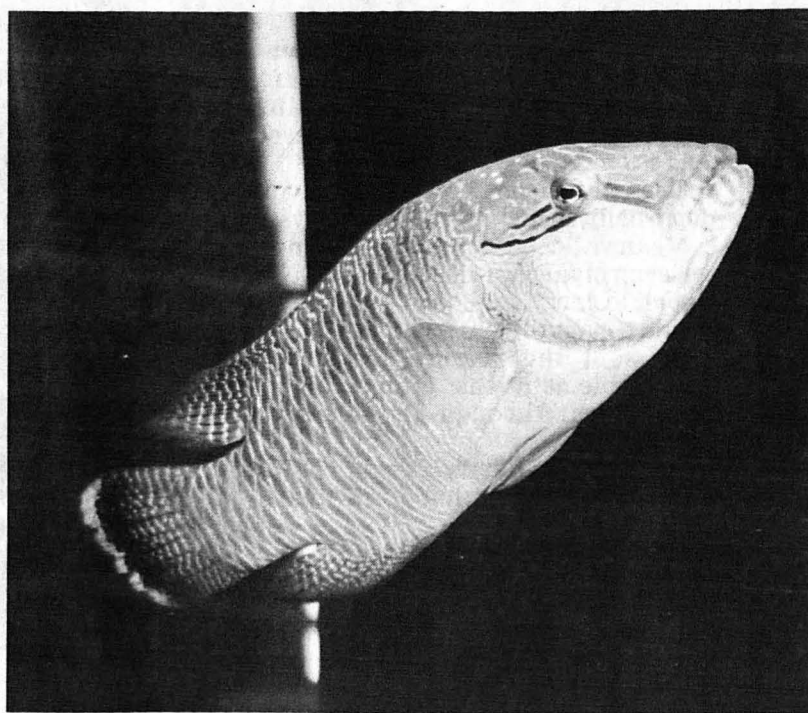
Factors that lead to overfishing

Overfishing arises mainly due to excessive harvesting. Other reasons include destructive fishing methods such as fish bombing and poisoning which kill the fish indiscriminately, including brood stock and immature virgin fish.

Saleem pointed out that killing one grouper brood stock, with eggs, did not mean killing just one fish, but potentially millions of its offspring that could repopulate and sustain our seafood supplies.

Similarly fish poisoning poisoned eggs indiscriminately, while the killing of virgin fish threatened recruitment, he said.

"A fish should be allowed to breed at least once in its lifetime so that it could be replaced by progeny when caught," Saleem stressed.



A humphead wrasse at UMS aquarium.

It is worth noting that a one kilogramme grouper ordered at a restaurant represents the entire ecosystem, because to reach this one kilogramme, the grouper has utilized many links in the ecosystem.

The grouper had been feeding on smaller fish, smaller fish feeding on invertebrates and crustaceans, while those organisms feed on plankton.

These are the building blocks of the ecosystem. When these links were destroyed by overfishing, to a level that commercial fishes could not survive, Saleem said the ecosystem would become weak and ultimately crash.

"This has happened in so many species that has become extinct now and continues to happen," he lamented.

Biodiversity in Sabah was particularly important because of the abundance of coral reefs here, thus damage inflicted would destroy more fish population, he explained.

Impact of overfishing

The magnitude of effect of overfishing varies for different species. It depends on the biological nature of the fish species, which include the maturity period and parental care.

The impact will be less for fish that breed annually than fish that breed after seven years, Saleem cited.

For instance, grouper breeds when they are around six, seven years old, sardine at around a year old, mackerel less than a year old, giant clam at seven or eight years old, sometimes up to 10 years old.

"It is more devastating for species which mature late such as groupers, have low fecundity such as sharks and are sedentary such as giant clams where males and females could be so far apart that fertilization would fail to occur."

In Asia, Saleem said groupers were generally farmed for eight months to a year before marketing.

The most endangered species in Sabah

The most and only endangered fish species in Sabah is the humphead wrasse, otherwise known as ikan maming in Malay.

According to Saleem, humphead wrasse can grow to almost 100 kilogrammes and sell up to RM250 per kilogramme.

"You can never find this fish in the local market, there are some traders who exclusively catch this fish and it goes to the market overseas.

"Hong Kong is the number one market for this fish, there is a taste and niche market for the fish, and this fish is very difficult to get," he said.

Saleem said he knew a Chinese man, who comes from a family who catch humphead wrasse and store them for Chinese New Year where

the price of this fish would soar. The man has turned around and introduced the professor to people who trade humphead wrasses so that the institute could buy the fish and put them into the BMRI aquarium.

"This fish has a special niche market, people just buy and eat on certain occasions only," he repeated.

The sale of humphead wrasse is banned here.

Saleem said the population of humphead wrasse has been reduced to the extent that it was very difficult to find.

Culturing humphead wrasse is not an easy task either, he said.

The BMRI has started a breed and release programme for humphead wrasse in effort to try and rebuild its population. The fish will mature at seven years and the humphead wrasses that the institute is culturing now are around two years old.

The species, as Saleem said, is anti-social and aggressive towards each other.

At the start of the programme, this information was not known and the humphead wrasses were placed together in a tank.

What the institute found was that the humphead wrasses, due to their aggressiveness, will remove each other's scales with their sharp teeth. Fish scales were found at the bottom of the tank.

The institute immediately reduced the density drastically to lower interaction, and fed the humphead wrasse stock with more food to reduce its aggressiveness.

"If we succeed in breeding this fish, certainly we will release it into the sea, into the habitat where it likes to grow, and we will try to rebuild the population."

How to address the issue

The governments, fishing industry, scientists and consumers all have a role to play in overcoming overfishing.

The government could carry out enforcement, though Saleem did admit that the situation could be beyond the law enforcement agency's control.

"Law enforcement agency cannot be everywhere, even the most developed countries like the United States (finds it) very difficult to control the illegal immigrants coming from Latin America, Columbia and many places."

Enforcement had to be effective, and it required a lot of intelligence as to who the fish bombers were and their whereabouts to keep the police informed, he said.

While our enforcement is better than many countries in the region such as the Philippines and Indonesia, Saleem said it was still insufficient, which might due to the lack of resources.

On the other hand, BMRI has

become one of the members to join an effort to create a marine protected area in Kudat, where the humphead wrasses populate.

Saleem said developing the marine protected area would ensure a habitat to live under protection, which in turn would allow them to breed and generate the population.

However, fishermen are against this idea as they opine that the marine protection areas will restrict their operations.

Unlike clams which are immobile, Saleem said fishermen could still fish outside the marine protected area as fish moved around.

It was not easy for the fishermen to understand, Saleem admitted, unless the fishermen were provided with alternate means of livelihood.

"Aquaculture is one thing that can open opportunities," he said, citing examples such as seaweed farming or sea cucumber ranching.

In this respect, the government could create alternative livelihoods for fishermen through its many agencies, he said.

On the other hand, Saleem said the fishing industry should be more responsible. Trawlers should stay away from areas for smaller scale fishermen, nor should they employ fishing methods which are destructive in nature.

"They should not be fishing near marine critical habitats where there is breeding area for the fish."

"I think a lot depends upon the individual's sense of responsibility."

Saleem said public awareness was important, in the sense that the public should not eat bombed fish, poisoned fish, virgin fish and fish with eggs in its body.

"The public should not ask for ikan maming (humphead wrasse). When the demand drops, the activity will stop."

Meanwhile, scientists should not only generate information, but also develop and share the technology needed by providing alternative livelihood in addressing overfishing, he said.

"Eventually scientists cannot remain confined to their rooms, they have to work with the community."

Experiments on the effect of climate change on marine life

Apart from aquaculturing, sea ranching and developing marine protection areas with other agencies, the institute is conducting an experiment to study the effect of climate change on marine species.

The simulation experiment on ocean ecosystem will demonstrate the resilience of various species to acidification. The experiment is expected to be completed in the next two months.

"We must prepare and foresee seafood security. We must have a plan for seafood security because if we delay, we won't have any scientific data, we might face seafood security problem."

Climate change is taking place, Saleem emphasized.

Climate change not only affects seafood supply, but also causes oxygen-deprived areas in the sea, known as dead zones, characterized by mass mortality of fish.

"In Sabah, dead zones have not been reported per se, but sometimes there is mass mortality (of fish)."

Saleem said it has been proven scientifically that healthy marine critical habitats will lessen the impact of climate change.

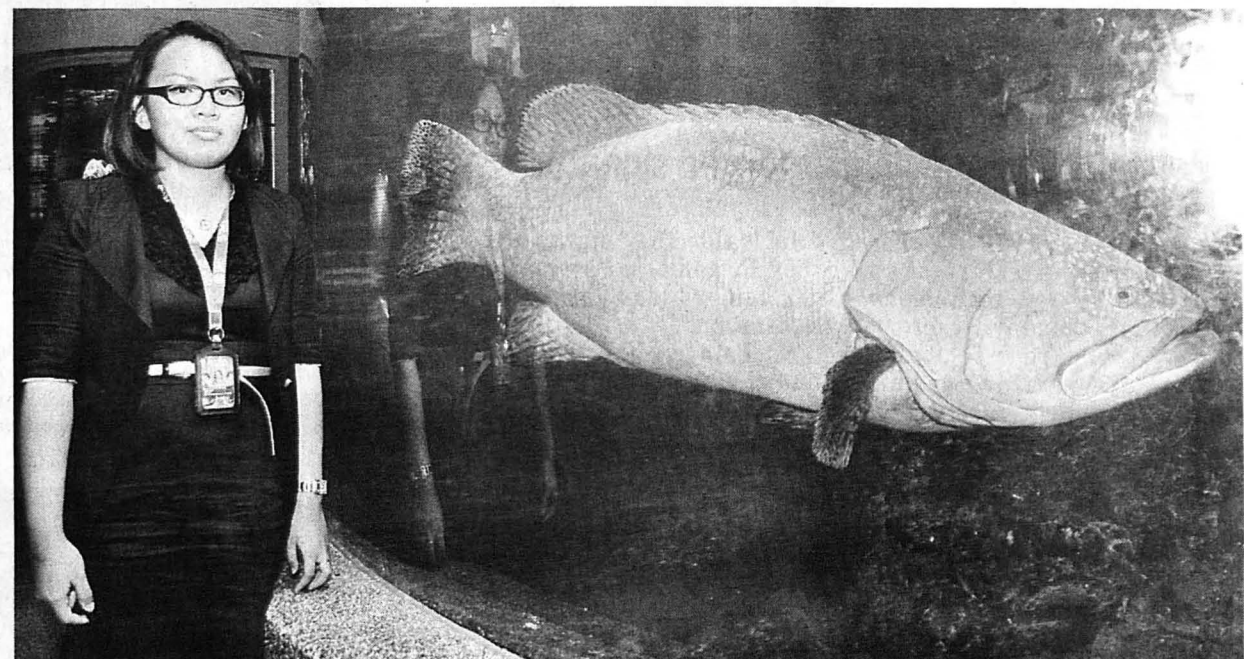
One of the methods is to develop adaptations in the system by using coral reefs, mangroves and sea grasses as buffers against climate change.

"We cannot reverse climate change but we can lessen the rate at which it is taking place."

"This requires a global effort."



Some of the larger fishes found in the fish market in Kota Kinabalu



Flora Anne Asalin, the curator at the aquarium in UMS, stands next to a five-year-old grouper that weighs 62 kilogrammes.