Can the Indonesian Marine Aquarium Trade ever become sustainable?

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It has been more than a decade since our organisation started working on marine ornamentals issues in Indonesia. From conversations with people in the Marine Aquarium Trade (MAT), and from our own experience, it soon became clear that there were a number of problems with the business that ultimately threatened the sustainability of the trade. These included poor collection, holding and shipping methods, high stock mortalities, and unfair trade practices that hurt the livelihoods of the fish collectors on who the trade ultimately depends, not to mention the survivability of the marine organisms, and the reefs on which they are found.

One overriding question emerged during these early days. How could an industry that had been operating for nearly 30 years in Indonesia still be so poorly organized and managed?

At first, we worked with an international organisation (the Marine Aquarium Council, or MAC), which, being primarily a certification organization, sought first to define a set of standards by which the MAT practices could be measured. The idea was that those people, who adopted the standards would eventually become certified so that anyone with this certification would be recognized as promoting 'best practices' that encouraged and supported sustainability of the MAT with the motto "from Reef to Retail". So far, so good…

However, it soon became apparent that, for many in the Marine Ornamentals (MO) business, MAC was a thorn in their side, because it threatened to disrupt the status quo that had allowed those poor practices to continue for years, and simply promoted the business ethic "buy cheap, sell expensive", without regard for either the needs of the suppliers or the continued health of the stock at source.

Moving forward five or six years, MAC ended up being despised by many of the very individuals and businesses that were supposed to be benefiting from this cause in the long term. Seen from a business perspective, some of their arguments made sense. MAC clearly failed in connecting markets with producers – an important component of any certification program. Nevertheless, although MAC's work has been stopped for over 5 years, some people in the MAT are continuing to use the MAC Certified Logo, although their certification had lapsed, or they are using the 'MAC Certified' logo on livestock, while no certified collection and thus product exists anymore. Whenever handy as justification MAC is referred to as the sustainability force of the MAT.

Still, it is a sad fact that in this part of the world at least, the trade in wildlife – including marine organisms – is largely unregulated, and efforts to do so have often failed or had limited success. Indonesia is one of the biggest exporters of MOs. While some advocacy groups would prefer to see this trade banned altogether, our organization considers this approach to be unrealistic and impractical.[1] It is more reasonable to try to make the MAT more sustainable for the future by supporting the efforts to improve at the supply end. Those of us who were working with the supply end of the trade (primarily with collectors, middlemen and exporters) developed and field-tested a

[1] Comment by the editor: Bans in general potentially have the adverse effect of nourishing those with a criminal spirit and in search for quick and big money. Rarity and illegality are often going hand in hand. Demand is increasing for the forbidden fruits (e.g. never before or after the ban on import of angel and butterfly fish into Germany in the 90s there was such high demand for specimens from these families). But any means of control or regulation are gone with a ban as well.

battery of training materials that were aimed at having a positive impact on the practices at the supply end. The work included engaging with poor fisher communities, and then training them in simple economics, collection, holding and packing methods to reduce stock mortality and to increase survivability and health of the stock, alternative non-destructive collection techniques (for example stopping the use of cyanide and breaking of the corals) and safe diving practices to reduce the incidences of collectors suffering from paralysis and death because of the dangerous diving methods (such as compressors or 'hookahs') used by them. The methods used by the middlemen and exporters for holding and shipping were reviewed, so that some of them eventually went through the rather rigorous (for them) process of adopting the MAC standards and practices. Good working relationships were developed with the traders, who were initially very suspicious and mistrustful of our motives, but progress was slow. After all, trying to impose first world values and standards on Third world communities and businesses can take many years, or even generations.

Over time, many improvements were being made at the supply end, but it soon became apparent that greater support would be needed from the buyers in the developed countries if the trade were to be truly transformed for the better. For various reasons, it was difficult to get the message through to many of the importers, retailers and, most importantly, the end buyers (including the hobbyists), who live so far away from the source of the products they demanded. For example, when asked if they knew about the problems at the supply end a leading retailer in the UK was visibly surprised, and said he had no idea about any of this. He assumed that cyanide use, for example, had stopped long ago. Clearly, the message had failed to get through to the people who have the power to lobby for and support positive change in the industry. For example, the hope was that informed end-buyers would demand to know where the stock they bought came from. But being so far away from these buyers, we had no influence on them.

Over ten years later, many of these issues are still the same, and very little has changed. In Indonesia, our organization still continues its work with poor coastal communities, but with more of a focus on community-based initiatives that promote the conservation of marine resources on which they depend for their livelihoods. Being among the poorest sectors of Indonesian society, it is important that these fisher communities have long-term sustainable livelihoods that give them the opportunity to drag themselves out of the poverty traps they have endured for so long. They need to be empowered to protect their own resources.

Presently, we notice certain marine species (for example, the Blue Tang *Paracanthurus hepatus)* becoming rare. As a consequence, collectors are obliged to travel very far from their villages to find the remaining stocks. They have to dive much deeper, increasing the risks to their health. Then the fish are held in poor conditions, sometimes for weeks, without feeding, before the collectors can return home and sell them. Stock mortality rates are therefore very high. But of course, the traders will not want to buy stressed, damaged or otherwise unhealthy fish, so after 'cherry picking' the best ones, the rejected fish that survived the journey will be dumped into the sea, sometimes hundreds or thousands of kilometers from where they were caught. This has implications for mixing of genetic strains, disease introduction, and predatory species whose introduction might threaten the survival of other species.
The use of cyanide still persists, although it is possible to use non-destructive methods to catch the same species. For the poor coastal communities, the pressure is on to take as many of the dwindling resources as they can, before someone else does! [2]

[2] Comment by the editor: Thinking of poor fisher folks focuses on survival and having something to eat today, not about conservation of resources for tomorrow. With limited and often hand-crafted equipment, cyanide use certainly increases the number of fish one can collect in the limited time while free diving. Investments in equipment are usually not covered by the low prices of the catch. So demanding cyanide free collection is one thing, paying for it the other necessity.

Meanwhile, the exporters and importers still complain about how expensive it is for them to run their operations, and say that, in contrast, the collectors have no overheads (and possibly not even any electricity!) and therefore do not need a higher income. Some traders have even admitted that these poor coastal dwellers are easily exploited, partly because they have no education, and no money. As one trader opined *"the collectors only need to eat rice and fish heads, and don't pay taxes. What do they need money for?"* The fishermen are perceived as being incompetent, because they are unable to always fulfill the orders, and greedy when they are starting to ask for higher prices for the fish they catch.
Many of them have never had the means with which to benefit from even basic education. They have little business sense, feel they have no bargaining power, and think they are obliged to accept whatever deals are put to them. They are therefore very easy to exploit and take advantage of. Unfortunately, holding facilities are so poor or absent at the supply end that the fish cannot just be pulled out of an aquarium and packed to order, like so many other consumable products. Sometimes bad weather prevents the collectors going out for days or weeks, in which time they earn nothing. It is unfair to blame the suppliers when there are so many factors affecting the supply of 'product' that are beyond their control.[3]

Prices paid for fish at source remain low – for example, collectors are paid USD 0.07 for green chromis (*Chromis viridis*); this rises to USD 0.35 when the exporters sell to the importers, and USD 5 at the retailers. As another example, one small-sized Banggai cardinalfish (*Pterapogon kaudernii*)) is bought for USD 0.05 from the fishers, it sells for USD 0.45 by the middlemen to the exporters, the importers pay the exporters USD 2.25 per fish, which is finally sold by the retailers to the hobbyists for USD 26 for this one fish. Notwithstanding holding and transport charges (water is heavy to ship around the world!), this dramatic difference between the price at source and the one paid by the end buyers would seem to imply a degree of unfairness in this trade[4].

Because of poor collection and handling methods, stock mortalities remain unacceptably high, which in turn obliges the collectors to work longer hours to collect huge numbers of fish to offset the high mortalities. Having no access to commercially-available soft netting, many collectors are still obliged to weave their own nets from coarse string, which inevitably damages the fish. The high degree of wastage has undoubtedly caused the numbers of certain populations of fish on the reefs to decline significantly. Efforts are being made at the supply end to improve quality and reduce stock mortalities, by promoting the use of better practices in collecting, and improving post harvest techniques used by the fishers. However, the resulting improvements in stock quality have so far not triggered a willingness among the buying countries to pay more. Fortunately, more recently, some enlightened exporters have said they are willing to pay more to their suppliers, but their buyers (the importers), particularly in the US, will generally only buy from them if the fish are cheap, especially if the stocks come from Indonesia.

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[3] Comment by the editor: In most cases the supply chain in Indonesia is long and complex with several middlemen involved. This is caused by the lack of infrastructure and availability of ornamentals in sufficient number within easy reach of export centers. This takes its toll on quality of the products, but also on the price being paid to the collector.

[4] Comment by the editor: While working with certified fishermen during MAC times, we found out that these trained aquarium collectors got better paid for collecting sea cucumbers for the seafood trade than for the supposed luxury good of an aquarium fish.

So what might be some solutions to these problems? Here are some suggestions:

1. Increases in the prices of fish sold need to start at the retailers' end of the supply chains. A survey of hobbyists' opinions on willingness to pay more showed that overall, they are willing to pay higher prices if it can be demonstrated that the fish come from well-managed areas, and have been collected in a responsible manner. However, there also need to be assurance mechanisms that the price increase is handed down to the collectors and doesn't disappear in the pockets of the exporters only.
2. Fishers in some collection areas are being helped to rebuild and restore their damaged reefs to enhance their local fish stocks, and reduce the need for them to travel huge distances to collect the fish. Fish and other marine organisms (e.g. ornamental shrimps) are becoming available from these restored habitats, but they are not yet fetching higher prices, as most buyers will still be looking for fishers who sell their fish cheap. Greater marketing of these products to the end buyers may help to address this problem.
3. A growing number of fishers groups are trying to shorten the supply chains by choosing their buyers more strategically and selectively. The intention here is to reduce stock mortality, and therefore sell more fish with less rejects, but significant financial rewards that provide incentive for the collectors to improve their practices, have yet to materialise. Prices still remain much the same as before, and once again, an increased awareness of this problem among the end buyers will help to address the issue.

4. Regulations on keeping fish in optimal health have been strengthened significantly in Indonesia, and the quarantine office is now conducting onsite checks and requires exporters' facilities to comply with biosecurity regulations. This will improve standards at the supply end.
5. The hope for the development of new cyanide testing methods and portable kits is high. However regulation should be supported by market nations requesting legal and regulated fisheries by testing for cyanide upon import.[5]
6. Some enlightened exporters and importers do see the need for positive change, and believe that investment that ultimately leads to the sale of good quality fish is economically viable and makes good business sense in terms of securing future supply. Once more, it is hoped that marketing of their products along with information that encourages the end buyers to make more informed choices, will eventually lead to a significant shift in buyer preferences towards more ethically and sustainably sourced fish.
7. The emphasis on the kinds of help given to those at the supply end has changed over time towards direct help, in the form of helping the education of the fishers children, providing better holding facilities at the middlemen and training to the fishers and middlemen how to improve their practices in keeping the fish. It must be acknowledged that not all of the fisher communities are ready and/or able to make the necessary changes, and it takes time, money and trust building for those wishing to help them to understand this. For example, some of these communities are being asked to move from a barter system (no money involved, only exchanges of goods) to a monetary economy, and experience shows that this process can take many years. It is difficult to know how this will be achieved, especially without adequate support from the industry.
8. According to some importers, while captive breeding (CB) of MOs might reduce reliance on the capture of wild stock, a number of obstacles remain. Many species of MOs are very difficult and expensive to breed in captivity, and as long as it is cheaper to buy wild-caught stock, the need to promote CB might not be felt to be so urgent. While often seen as alternative to wild trade, it is no solution for the traditional producers as most captive breeding farms operate within market

[5] A non-invasive test has been developed and is now in phase of being refined into a serial testing/portable device. http://www.blooloop.com/news/sea-life-centres-in-bid-to-combat-cyanide-fishing/3665#.UqbMYygnsXI and http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0035355

countries. One option for the future, is to promote mariculture at source, by, for example, training the fishers to catch tiny fish fry (Post Larvae) and then rearing them to a saleable size in cages just offshore. Although this will require investment in basic equipment and training, the prospect of rearing post-larvae in this way is attractive, not least because rearing in the sea, but in a controlled environment, will reduce the mortality normally experienced by fish fry compared to when they grow naturally and wild on the reef. If a certain proportion of the fish are then released back onto the reef, they will actually help to increase wild stocks for the future. On the down side, mariculture requires not only some basic equipment and facilities, but also a level of commitment (timekeeping, regular maintenance schedules) that the collectors still need to be taught. Many of them have no watches for timekeeping – so far, they have not needed them on a day to day basis!

9. Ultimately it is the end buyers who, through heightened awareness, have the power to pressure the industry to make the changes we think are necessary to support a fair and healthy sustainable MO trade. The days of sellers relying on the ignorance of their customers should be long gone. Getting the message out to the hobbyists so they understand better the circumstances in which the fish they buy are caught and traded, and can make more informed purchase choices, is a priority. We look forward to more support from agencies and individuals in those far away countries in achieving this goal.

So in conclusion, insofar as it is still profitable, the MO industry – and particularly those traders and end buyers in the buying countries - can still do much more to help the people who supply them. If they are ever to escape the poverty traps and debt spirals in which they find themselves, the collectors need a decent, fair income as an incentive to protect their resources and have quality fish to sell. They also need skills training of various sorts to enable them to compete more effectively in a growing world market. (In developed countries, the fish collectors do receive decent wages, are given contracts, equipment, boats, training and insurance. Why not here?). In this new era of Corporate Social Responsibility (CSR), where individual companies enhance their social profiles by using some of their profits to help the needy around the world, we can hope that the MO industry might follow suit.

Let it be underlined that there are some very good people out there, whose awareness of the issues is acute, and whose willingness to engage with, and support those who supply them, will surely stand them in good stead in the future. We must remain optimistic for the future, but in another ten years' time, history will show us all how things have turned out.