

OFI Journal



Official publication of Ornamental Fish International

Special
Conservation
Edition



In this issue:

CITES: Politically- or conservation-based?

Conservation of Indian freshwater fishes

Buy a Fish, Save a Reef

'Feel Good' Rio Negro news

Letters of Support



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**DISCOUNTED RATES
FOR OFI MEMBERS**

Editorial

If someone were to have told you 30 years ago that the conservation community and its ornamental aquatic counterpart would sometime soon be collaborating as close allies in conserving wildlife and habitats, how much credence would you have granted such a prediction?

My guess is that, while harboring hopes that it might eventually turn out to be true, you'd, equally, harbor doubts that such a mutually-supportive relationship would ever develop. Yet, today, the degree of collaboration, respect and support that has evolved between both 'worlds' has, in some respects, surpassed expectations, lending truth to the old adage that "From little acorns, oak trees grow".

When I presented a paper at the 'Conservation and Management of Ornamental Fish Resources of the Rio Negro, Amazonia, Brazil (Project Piaba) International Workshop' way back in 1999, I would never have thought that such a collaborative relationship would develop, at least, not to the extent that it has. Nonetheless, I hoped it would... and it has.

As a result of the ever-expanding understanding and collaboration that we have experienced since then, a new way of perceiving the relationship between conservation and ethical commercial activities has also arisen. Industry is therefore no longer seen as 'the problem', but as an integral part of 'the solution'... so much so that the slogans, 'Buy a Fish, Save a Tree' and 'Buy a Fish, Save a Reef', as well as their implications, are now widely accepted. We are, thus, finding ourselves in a most welcome 'win-win' situation that augurs well for our shared future.

So... are we swimming in a bed of roses? Is this encouraging state of affairs universal?



PHOTO CREDIT: HORST LINKE

Are all the historical problems that existed between significant sections of the world of conservation and that of the commercial community now dead and buried, and gone forever?

It would be absolutely marvelous if this were to be the case, but, unfortunately, it isn't... not by a long, long way! Take a look at this: "If there is one trade in India which is completely illegal, unregulated and unlooked at by government and wildlife activists, it is the aquarium trade. Millions of fish are caught and put into small glass prisons every year where they die within a few weeks.

"If watching these poor animals struggle for space and swim endlessly to and fro in two feet of space is relaxing then you have to be as mentally disturbed as the fish probably are. In a mammal, this endless repetitive swimming would be analyzed as stress behavior. But who cares about fish?

"Where do colored fish come from? No one in the trade will tell you, or they will give you vague replies like they have been bred in Kolkata or Mumbai. But clownfish, for instance, the demand for which shot up after the cartoon Disney film **Finding Nemo**, cannot be bred. They come from coral reefs and they are long distance swimmers. Baby clownfish travel as much as 400 kilometers to find anemones, without which they cannot live. 90% are killed by natural predators during their travels. Now the other 10% are being poached for your 'relaxation'."

Read further on page 4

Without sustainable harvesting of aquarium fish, Rio Negro piabeiros (fish collectors) would have to resort to destruction of the rainforest in order to survive.

PHOTO: JOHN DAWES



ORNAMENTAL FISH INTERNATIONAL

is the worldwide organisation representing all sectors of the ornamental aquatic industry.

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COLOPHON

Cover Photos:

Courtesy of – Project Piaba, LINI, Dr. Mini Sekharan

Print:

Coolegem Media, Rotterdam, The Netherlands

Acquisition and editing:

John Dawes

Design, Layout and DTP:

Monique Giling, MGO-studio, Maarsse, The Netherlands, www.mgo-studio.nl

Liability:

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“Exporters from India, Sri Lanka, Malaysia, Philippines, Singapore loot and sell millions of marine animals with impunity.”

“No rules are followed at all - by exporters or importers.”

“The aquarium trade should be banned. Have we not banned hunting for mammals and birds? So, why do we allow hunting, selling and buying of fish?”

Do these ‘spectacular’ statements ring true in any way whatsoever? Do they show even the remotest appreciation of the reality of the relationship that exists between our industry and some of the most important conservation organizations in the world? No, of course, not!

The person responsible, obviously, has little or no idea what she is talking about. It is clear that she hasn’t read any of the relevant literature, or has done so, but has chosen to ignore it, maybe because the evidence and data factually contradict what she wants to say. The person behind these and many other equally incorrect statements is Maneka Sanjay Gandhi, Indian Union Cabinet Minister for Women and Child Development in Prime Minister Narendra Modi’s government. She is an animal rights

activist and environmentalist, is the widow of Indian politician, Sanjay Gandhi, and is a member of the influential Nehru-Gandhi family. She published the above comments in an article in the *Andaman Chronicle* on 3 November, 2014.

Unfortunately, this outpouring of impassioned, destructive, unsubstantiated and alarmingly incorrect ‘information’ somehow filtered through to the Indian corridors of power, as well as to a number of publications, to the extent that they appear to have been accepted as ‘facts’. This, while disturbing, would not have been disastrous if that’s where they had remained, i.e. within the minds of those who unquestionably accept them as truths, or the lines of newspaper articles.

Sadly, these false statements, supported by powerful anti-pet trade animal activist organizations like PETA (People for the Ethical Treatment of Animals), were taken as fact, to the extent that, on 23 May, 2017, the Indian Ministry of Environment, Forest and Climate Change, issued a Notification which could, effectively, put an end to the Indian ornamental aquatic sector. (See: **New ornamental fish regulation has serious implications for the industry**, by Dr. Mini Sekharan, *OFI Journal*, Issue No. 85, October, 2017.)

Regrettably, such incidents are not as isolated as we would like to think. Take, for instance, the ruling passed last September by Hawaii’s Supreme Court, which resulted in a ban on the State’s marine ornamental sector. Disturbingly, it was taken in the face of strong evidence that shows Hawaii’s marine ornamental fishery to be perfectly sustainable. (See: **Secretary General’s and President’s Report** in this issue of the *OFI Journal* for some further details).

As these two examples show (but there are more), we still have a long way to go and many difficult challenges to tackle. We therefore hope that the articles contained within this special edition of the *OFI Journal* will assist us in addressing these challenges alongside those conservation colleagues with whom we have been working so hard for so many years on so many issues of great complexity and shared concern. There are also numerous other potential ‘win-win’ scenarios out there... we just need open-mindedness and commonsense on all sides to reach this goal.

It may prove elusive, but our industry is ready and up for it. Is everyone else also similarly disposed?

John Dawes ■



Did you know that clownfish can't be bred in captivity??? Well, someone must have forgotten to tell the breeder of this healthy batch of young captive-bred clowns!

PHOTO: JOHN DAWES

Secretary General's Report

OFI members promote and support the captive breeding, farming and collection of ornamental aquatic animals and aquatic plants with respect for natural populations, the environment and the contribution made to socio-economic benefits for the local population. One might say that this is just a trending topic in the daily news, but in our industry, it is much more; it is an absolute necessity.

You may have recognized above, a small section quoted from our Charter (See next page). This is certainly not a hollow phrase, but a necessity as part of our industry depends on wild-caught fish. It is estimated that around 90% of marine ornamental fish and 10% of freshwater ornamental fish traded in our industry originate from the wild. These figures emphasize that it is in our own interest to maintain the resources we depend on so that they are renewable and, thus, sustainable. Healthy stocks and sustainable collection will make long-lasting trade possible. Without it, the supply of wild-caught fish would dry up.

In the ongoing battle between our industry and those plotting against the commercial collection of reef fish for aquariums, the Hawaii Supreme Court ruled last September to impose a ban until the state reviews the trade's environmental impact. As the third largest source of marine ornamental fish after Indonesia and the Philippines, this must have, as long as this ban is in force, a profound effect on the availability of marine species, especially in the United States. With many management measures already

in place in Hawaii, like spatial management and fish replenishment areas, this is not just a battle on sustainability. It is a battle between what some see as an ethical dilemma: whether or not it is appropriate to remove fish from reefs. No doubt, the current ban is bad news for our industry.

In my previous report, I wrote about the lack of positive news regarding our industry. Last September, though, OFI member, Scott Dowd of *Project Piaba*, was among the nominees for the 2018 Indianapolis prize for work with beneficial aquarium fisheries. The biennial prize is a world's leading animal conservation award. It recognizes and rewards conservationists who have achieved major victories in advancing the sustainability of animal species.

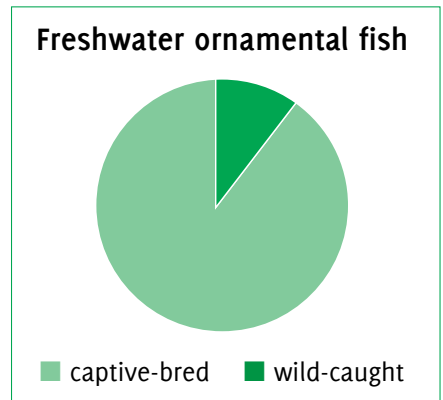
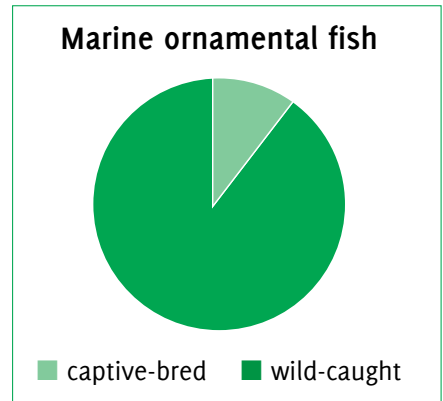
It is fascinating to learn how Scott Dowd changed his point of view regarding the trade in wild-caught fish in Barcelos, the main fish-collecting center on the Rio Negro. In his early visits, Scott was horrified by the numbers of tropical fish that were leaving Barcelos each year, only to realize later the importance of the trade as an environmental conservation tool (2015, **Montgomery, S.**, New England Aquarium employee's lifelong obsession with fish. *Boston Globe*, (13 April, 2015).

In the case of Barcelos, the trade in tropical ornamental fish is an example of a non-timber forestry product. Local fishermen make their living from what nature supplies them with, which gives them a powerful reason to conserve aquatic habitats. Without this livelihood, they would have to convert to other activities detrimental to the environment like mining, cattle ranching and logging.

Positive news related to our industry does not get much better than this nomination



Moorish idol and yellow tang side by side in shallow water in Hawaii. PHOTO: JOHN DAWES



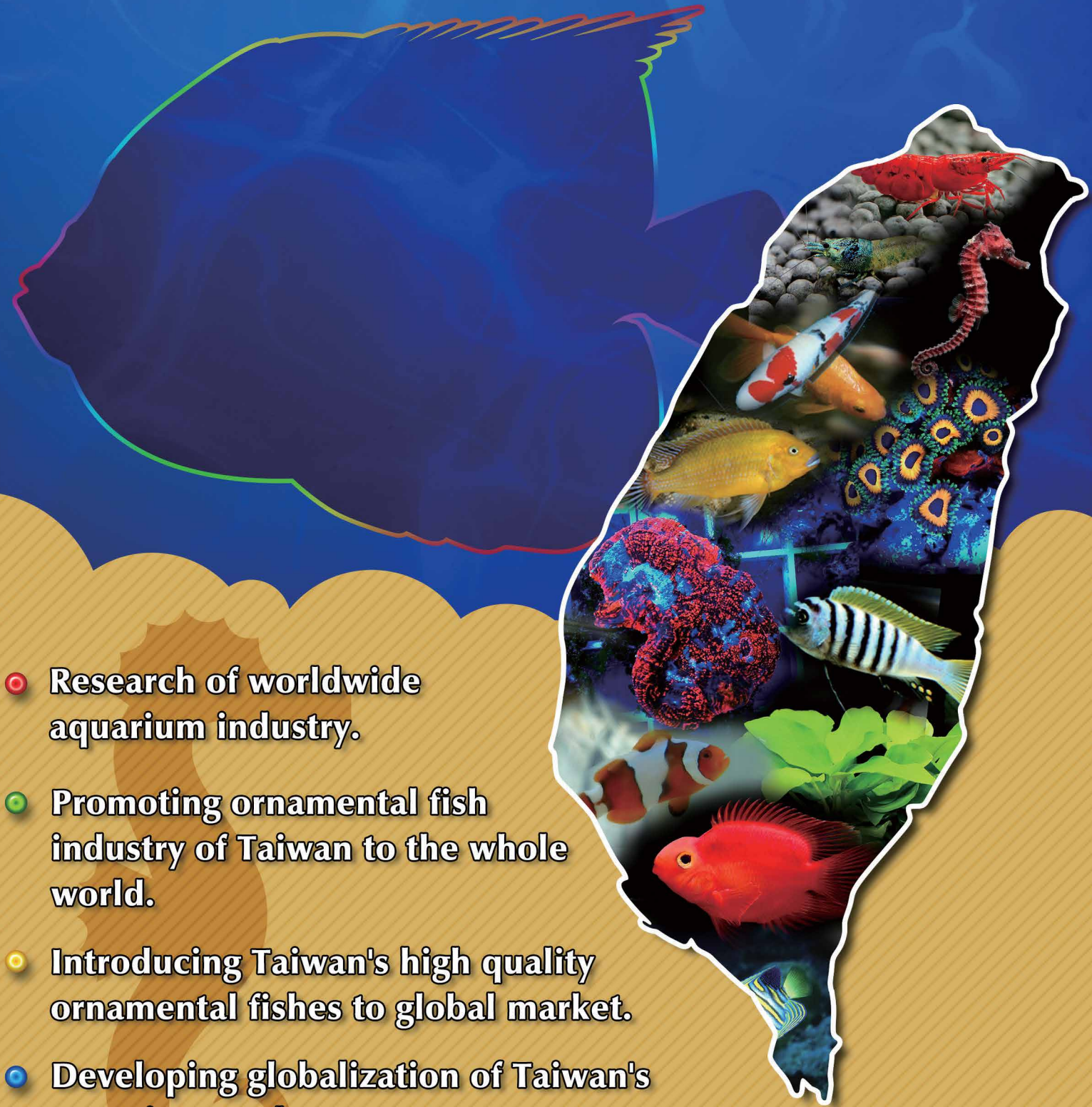
Origin of marine and freshwater fish in the ornamental aquatic trade.

for Scott. Recognition for his work in Barcelos, Brazil, to increase the environmental, animal welfare and social sustainability of the Amazonian aquarium fish trade, to

Because of the economic opportunity the fishery provides, locals are less likely to resort to destructive practices like slash-and-burn agriculture, illegal logging, or gold mining - issues which plague many other areas of the Amazon today. The cash income provided by collecting these tropical fish also provides a strong incentive for fishers to protect the pristine rivers and forests which they rely on for their livelihoods— "a very effective driver of environmental protection," Dowd explains. (Mike Tuccinardi, The Tiny Amazonian City That Supplies Aquarium Fish to the World, 30 August, 2016, [Atlas Obscura](http://www.atlasobscura.com/articles): www.atlasobscura.com/articles).



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Pristine Rio Negro rainforest, such as this, would be threatened without Project Piaba's sustainable harvesting policies and practices.

PHOTO: JOHN DAWES

develop and incorporate metrics through which this progress can be assessed, and to provide mechanisms to promote this industry (Indianapolis Prize-press release, *Project Piaba* – www.indianapolisprize.org).

Scott (just as the local fishermen in Barcelos)... we will keep our fingers crossed for you when the next round in the Indianapolis Prize election process comes around. OFI members, share these good news with your customers and, ultimately, let home hobbyists know how buying a fish can save a tree.

Our Charter is the cornerstone of our association. By accepting the OFI Charter, we, as members, are contractually obliged to conduct our business according to the ethical, fair and legal trade detailed in the Charter. If we feel that all of this is important, our association will have a great future. Members should ask themselves: Why trade with parties that have not subscribed to these standards?

In general, a (trade) association focuses on the collaboration between members. It has an important role to play in presenting a

positive image of the industry it represents and in influencing public policy where possible. OFI is no exception, as we protect the interests of the international ornamental aquatic industry. I believe that a great number of you have become an OFI member to find, to some extent, security by doing business among a group of trusted stakeholders and having your interests in keeping markets accessible for your activities through your association.



Paul Bakuwel ■

OFI charter

- OFI members promote and support captive breeding, farming and collection of ornamental aquatic animals (hereunder, fish and invertebrates) and aquatic plants with respect for natural populations, the environment and the contribution made to socio-economic benefits for the local population.
- OFI members only trade in fishes, corals, other invertebrates, plants, etc. that are legal in their country; they respect national and international laws and regulations.
- OFI members prevent the release of specimens into the wild, except for specific nature conservation projects.
- OFI uses the latest science for defining its standards and supports scientific work relating to our industry; OFI members apply proper scientific names to the best of current knowledge.
- OFI members support the careful collection of freshwater and marine fish and invertebrates.
- OFI supports the education and training of breeders, farmers and collectors to further improve appropriate handling, animal health and welfare protocols, and promoting diver safety (e.g. OFI condemns the use of cyanide or other poisons, coral breaking or trenching, etc., for the collection of marine organisms).
- OFI promotes trade and handling of ornamental aquatic animals with respect for their wellbeing; OFI members pack and transport aquatic animals in accordance with national and international legislation (see OFI Educational Publication 7).
- OFI promotes the addressing of biosecurity risks in our facilities and the training of staff in biosecurity practices (see OFI Educational Publication 4); after longdistance transport, or when needed, importers will see to it that fish receive adequate quarantine.
- OFI members undertake to make every effort to maintain the health of aquatic ornamental animals. They provide proper water quality, implement adequate treatment and feeding protocols and organize regular health inspections. OFI members restrict the use of antibiotics as much as possible, and in accordance with relevant national legislation.
- OFI members operate in a spirit of cooperation with each other and according to honorable standards of trading, both between each other and with non- members of the organization.
- OFI members agree to settle legitimate complaints promptly and satisfactorily.

President's Report

During AquaRealm 2017, held in Singapore last June, our Editor - John Dawes, our Secretary General - Paul Bakuwel, and I discussed several possibilities regarding the OFI Journal for 2018. John suggested we produce 'theme-based' editions, each one containing a range of articles focusing on a specific theme that affects our industry. I thank him for his suggestion, as we believe it to be a great idea. We have therefore adopted the concept and are pleased to present our members and readers with the first of three special editions which we will be publishing during the course of the current year.



PHOTO: KATHRIN GLAW

This theme-focused approach gives OFI the opportunity to pull together experts in each respective field and present a series of articles that explore the selected subject areas and how they relate to our industry. I believe this is important for our members and our industry in order to develop a better understanding of what these issues mean to us and, perhaps, provide some future direction as to how they may be dealt with.



Exports of yellow tangs, along with other Hawaiian species, are now banned as a result of the Environmental Court's ruling. PHOTO: JOHN DAWES

The theme for this edition is **Conservation and Sustainability**, both of which are currently topical and represent very real issues for our sector. Of all the challenges we face, conservation and sustainability have probably been the ones that we have heard the most of during recent times. There has, for instance, been a concerted push by many activist groups around the world to protest about the collection of wild-caught fish, with the release of the Disney movie 'Finding Dory' acting as a focal point for considerable media discussion and protest about collecting marine fish from the wild, and whether this activity is sustainable or not.

As I am beginning to write this report, I have also just learned of the ruling by the First Circuit Court in Hawaii that states: "...the First Circuit Court – sitting as the Environmental Court – (has) ruled that any and all existing aquarium fish permits issued to commercial collectors to date are illegal and invalid."

This has been decided despite the fact that the Hawaiian fishery has long been regarded as being well-managed and sustainable.

The Hawaiian Department of Land and Natural Resources (DLNR) is responsible for issuing licenses for the collection of marine ornamentals, but it seems that the lack of a Hawaii Environmental Policy Act (HEPA) review means that these licenses are no longer valid. The DLNR believes the industry is sustainable, but must now conduct the review before issuing valid licenses, something which could take some months.

This ruling not only affects the collectors in Hawaii, who now face the real prospect of not being able to conduct their business for a potentially lengthy time, but also importers, wholesalers, retailers and hobbyists around the world, who will no longer be able to trade in species, such as the yellow tang, that are only sourced from Hawaii. This is a great example of the potential knock-on effect which regulatory changes in one country can have across the globe. However, as well as legislation from countries impacting our industry, there is also the increasing risk that international treaties, such as CITES, could be used to control or ban wild collection of many species.

These are just a couple of the very real and significant challenges that our industry faces in terms of environmental sustainability. We still rely heavily on wild-collected fish and, particularly so, within the marine ornamental fish sector. Therefore, changes to regulations regarding collection of wild fish can impact our industry in very serious ways. However, this matter goes further, as consumer opinion/demand in the major retail markets around the world can also be influenced by issues like sustainability. Consumers around the world are holding supply chains of most products up to a higher level of scrutiny, with sustainability, social benefits, animal welfare and similar concerns now forming part of the buying decision for many. We need to be mindful of this, particularly in light of wild collection relying on 'public assets' that are owned by a country, and not by individuals. Industry, thus, has a greater role to play in helping to ensure collection is sustainable and that such 'public assets' remain viable.

Not all is doom and gloom, though, and there are a growing number of examples from around the world which demonstrate how our industry is having a positive impact on the environment and is making a positive contribution to the conservation of aquatic organisms and the eco-systems they exist in. There is also the positive impact that our industry has on the livelihoods of many families throughout developing countries around the world. These positive

effects cannot be underestimated, as many thousands of families rely on collecting wild-caught fish for a significant part of their annual income. This is now being recognized in wider circles, with organizations such as IUCN (International Union for Conservation of Nature) acknowledging the important role the ornamental aquatic industry plays in several fisheries in protecting the environment. Indeed, we have articles in this issue which discuss some of these positive examples, showing how we deliver sustainable livelihoods to families in fish-collecting areas, such as the Amazon, Indonesia, India and elsewhere.

In the current environment it becomes ever-more essential to develop and adopt 'Best Practice' and uphold the OFI Charter, as Paul, our Secretary General, highlights in his report. As an industry, we are receiving increasing scrutiny from many stakeholder groups, and we have the responsibility to ensure we operate within the law and in line with community expectations. Without continuing to improve our sustainability by seeking to improve 'Best Practice' through science-based best management strategies, we leave ourselves open to criticism from stakeholder groups that want to close us down.

The other key thing to the issue of sustainability for the aquarium industry is to promote the good things that we do, along with the positive impacts we have on sustainability through initiatives, such as *Project Piaba*, LINI's work in Indonesia, the efforts of the Association of Live Tropical Fish Exporters of Sri Lanka to clean up local reefs by removing rubbish, etc.

We need to promote all these examples, and others, to ensure we get our message out. I see this as a key function for OFI and other trade organizations. We need to remain proactive and promote these positive examples in the media to inform lawmakers around the world. Indeed, the promotion of these positive examples is a growing function of OFI and other trade organizations within the EU parliament and other international forums such as CITES. Being able to deliver positive messages to the lawmakers is important in defending the industry's interests and in ensuring that we are not just targets for negative stories. Most importantly, though, it is important for members to keep our good work going in improving sustainability within our industry.

In closing, I would like to extend my best regards to all our members for the past festive season, and all my best wishes for 2018. I also hope you enjoy reading this first of three theme-based issues of the *OFI Journal*.

Shane Willis ■

Some of the rubbish collected during Sri Lanka's beach clean-up campaign held during August, 2016. PHOTO: COURTESY OF THE ASSOCIATION OF LIVE TROPICAL FISH EXPORTERS OF SRI LANKA



Ornamental Fish International

Aren't you a member yet?

There are numerous benefits you will enjoy by becoming a member of Ornamental Fish International. Here are a few:



- Access to industry officials in your country and at international seats of government
- Opportunities to influence national and international legislation relating to the ornamental aquatic industry
- Representation on international committees
- Increased business opportunities, including distribution of Journal at international events like Interzoo and Aquarama
- Support in resolving national and international crises within the industry
- Membership in an international organisation that operates according to a Charter.
- Membership of an international organisation that thrives for the highest standards of livestock husbandry at all stages of the supply chain, from collection/breeding, through transportation, to the home aquarium
- Free copy of the internationally respected OFI Journal three times per year
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- Access to an international network of members in about 45 countries
- Conferences and international meetings. Free access to aquatic industry data.
- Opportunities to exchange views and information with fellow members



CITES: Conservation or politics?

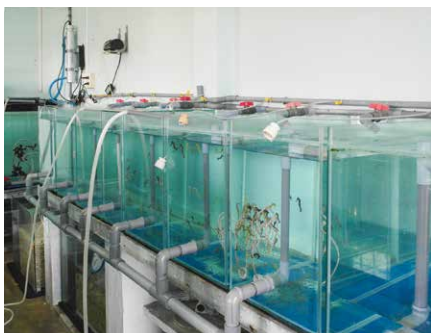
Svein A. Fosså, OFI Vice-President

I am often asked what is wrong with CITES. People are catching up on the criticism of CITES going more and more towards listing many species without real and substantial debate; of species being listed, even though they don't meet the agreed listing criteria; and of species never getting down-listed again once they've gone on one of the Appendices. Many seem to wonder whether CITES is still about trade regulation to benefit conservation and species protection, or if it is becoming a tool to prevent people from trading and keeping animals.

CITES effects

Practically every consumer in the world, most traders and a substantial part of legislators, seem to believe that CITES is about preventing trade in endangered species. Therefore, we so often encounter arguments like, "Species A is on CITES, so please don't buy it". More often than not, the legal pet and ornamental aquatic markets react fundamentally negatively to any CITES listing, and shy away from species that are listed, in particular from wild-collected specimens.

Nowhere have we seen that more clearly than with seahorses (*Hippocampus* spp. - see *OFI Journal* #82, page 27), where the registered trade in live wild-caught specimens since their listing on CITES App. II has dropped from 80,244 specimens in 2005 to an average of 2,500 specimens annually ten years later. That's a 97 % drop, and it hasn't helped the wild populations in the slightest, as the by-catch in other fisheries, added to the trade in dead specimens (which is



Since the listing of all seahorses on CITES Appendix II, the trade in live wild specimens has practically disappeared. Initially, much of this was replaced by captive-bred animals, but this has been dropping recently. This photo shows seahorse breeding facilities at the Institute of Oceanography in Nha Trang, Vietnam.

PHOTO: SVEIN A. FOSSÅ.

measured in metric tons rather than specimens) appear to continue as before the listing. The big losers, beside the species themselves, are the coastal communities who used to make a living from collecting seahorses for the ornamental trade.

In other species, we see that, while the level of legal trade declines, the black markets benefit and prosper from a CITES listing. Most recently, this has been shown to be the unfortunate effect of the up-listing of the African grey parrot (*Psittachus erithacus*) from App. II to App. I at the latest Conference of the Parties (CoP17, see *OFI Journal* #83, page 21). Despite warnings from the pet industry, the CoP decided to increase the 'protection' given by CITES, with broad support from animal rights groups and several conservation NGOs, including the Wildlife Conservation Society (WCS). The latter has now admitted that, since the up-listing, "Prices on the illegal market for wild parrots have quintupled ... leading to an explosion of trafficking". Still, they seem to continue to believe that the move to App. I was a good decision, and argue for even stronger restrictions on trade.

At the same time, captive breeders of African grey parrots, such as those in South Africa, who used to export tens of thousands every year, are struggling to get the legal permits to continue exporting them, thereby increasing the demand for illegally wild-caught birds even more.

So, when OFI and other trade bodies disagree with a CITES listing proposal, it is not necessarily because we disagree with the species being in trouble, but, more often than not, because we doubt that CITES listing would do anything good for the species. Rather than cheering for a listing that could be counter-



The author with two African grey parrot chicks bred in South Africa. The very skilled breeders there are now having huge difficulties exporting their animals, while, at the same time, conservation organizations report that the illegal trade from the wild has "quintupled" since the listing on CITES App. I. PHOTO: PRIVATE

productive, we would like to see measures that actually benefit the species without killing the sustainable trade. Nonetheless, over the years, we have probably supported more proposals than we have opposed.

What is CITES about?

This would all be fine and good if the purpose of CITES were to criminalize animal keeping and animal trade, but it isn't. CITES is about protecting natural resources from over-exploitation that could lead to the economical or, in the worst cases, to biological extinction of species. CITES is founded on the principle that "international cooperation is essential for the protection of certain species of wild fauna and flora against over-exploitation through international trade". CITES does not regulate domestic uses of animals and plants, and it is doing nothing to address habitat loss, ecosystem approaches to conservation, or poverty. CITES is about regulating international trade

and will therefore have an effect only when international trade is a threat towards the survival of the species.

The former Secretary General of CITES (1999-2010) Mr. Willem Wijnstekers, suggested that the name of the convention (Convention on International Trade in Endangered Species of Wild Fauna and Flora) itself misleads people, and that a better name would have been “Wildlife Trade Convention” in order to remind people that this is about ensuring sustainable trade. Species that are not traded internationally, or where the trade is proven to come from sustainable sources, have no place on CITES.

In practice, this means that the majority of species covered by the Convention are not threatened *per se*, but added on to one of the Appendices in order to monitor and regulate the trade in an attempt to avoid any possible negative effects on the populations. Of the approximately 35,568 species of animals and plants that are currently covered by CITES, only 2.75%, or 978 species, are technically considered to be endangered in the wild. All the others are, in theory, listed only in order to monitor and regulate the trade to avoid that they become endangered.

It is also patently obvious that CITES largely has this objective very much at heart. The CITES Strategic Vision: 2008-2020², which was revised as recently as at CoP17, makes it abundantly clear that it is all about ensuring that international trade in wild fauna and flora is conducted at sustainable levels.

Nevertheless, we see perversions, such as the mass listing of 60+ reptile species

CITES (this photo was taken at CITES CoP17) is, and should continue to be, about ensuring sustainable trade and not about listing as many species as possible with no regard to the effect this will have on species and economies.

PHOTO: SVEIN A. FOSSÅ.



When OFI and other trade bodies disagree with a CITES listing proposal, such as the ones for the Banggai cardinal fish, it is not necessarily because we disagree with the species being in trouble, but, rather, because we doubt that CITES listing would do any good.

PHOTO: KATHRIN GLAW



without any debate being allowed, which happened at CoP17. For very many of these species, it is already clear that the only effect the listings have had is making it more difficult to trade in captive-bred specimens, thus increasing profits in wild specimens and black markets.

Equally strange, but with the opposite effect, was the decision NOT to list the bluefin tuna (*Thunnus thynnus*) at CoP15 in 2010. Here, a clear majority of Parties were in agreement that the species was in dire straits indeed, but since the economic interests were so strong, it still did not get the necessary 2/3 vote in favor of a listing. This, evidently, was mainly because everyone feared that, once on CITES, it would never get off again.

CITES for eternity...

And that’s where the greatest failure of CITES lies. Nearly all practical experience shows that, once a species has been listed, you never get it off again, unless it can be proven beyond doubt to be 100% extinct, both in the wild and in captivity. Down-listing or de-listing a species because trade

has been proven not to happen, or to be sustainable, has, to my knowledge, never happened. Most pro-trade lobbyists will therefore always fight to avoid any listing whatsoever, but it is those who have strong economic interests behind them that tend to win. The pet and ornamental aquatic trade very rarely has the economic strength to stand against the pressure, and we end up being the alternative that is sacrificed in order to demonstrate that CITES still does something. It seems very probable, for instance, that five species of Central-American leaf frogs (*Agalychnis* spp.) were listed at CoP15 because the vote came immediately after the turning down of the bluefin tuna proposal: “We have to list something”!

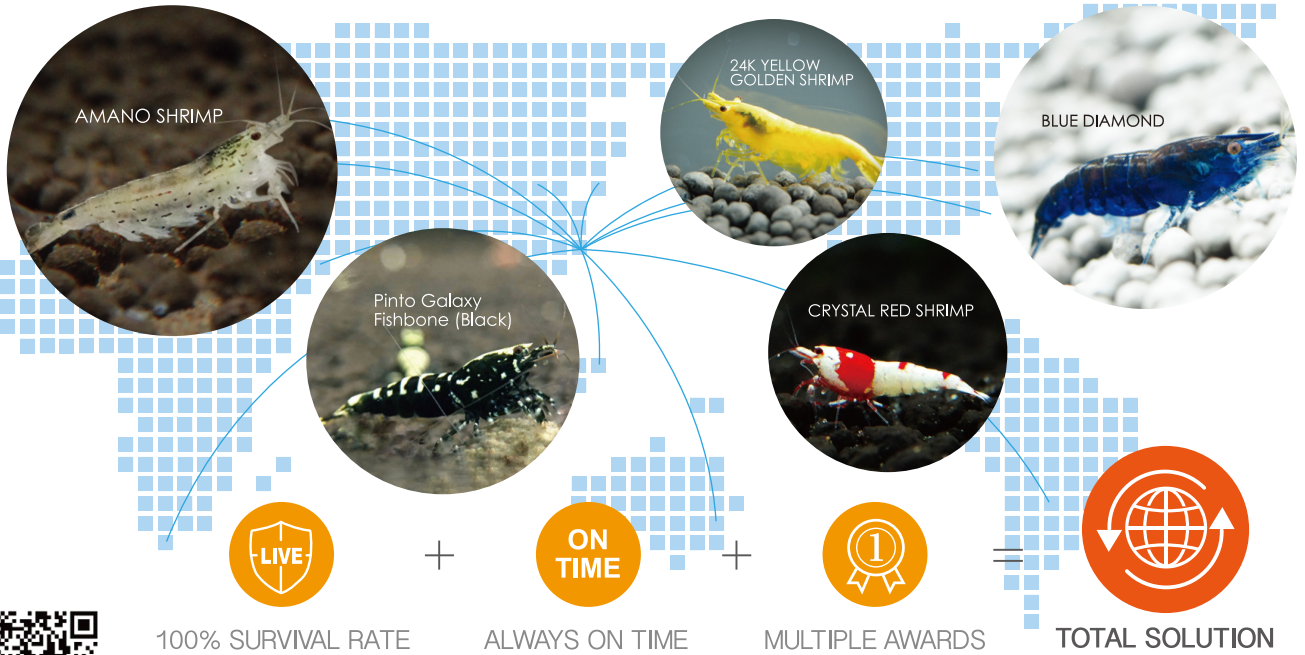
What about our fishes?

I haven’t given many specific examples of ornamental aquatic species in this article, since they have been extensively dealt with in previous contributions. However, everything points towards a rapidly increasing interest in using CITES for controlling trade in our species as well. It is only through our active presence at CITES meetings and conferences that we can have any realistic chance of avoiding useless and counter-productive listings. ■

FURTHER DETAILS
¹ WCS Releases Heartbreaking Video of Rescued African Gray Parrots Destined for Pet Trade. November 14, 2017. News release from newsroom.wcs.org.
² CITES Strategic Vision: 2008-2020. Conf. 16.3 (Rev. CoP17). https://cites.org/sites/default/files/document/E-Res-16-03-R17_o.pdf



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Trade can be an effective driver of environmental stewardship

Successful conservation and management of natural resources will typically depend on engaging with local communities. The International Union for the Conservation of Nature (IUCN)'s Sustainable Use and Livelihoods Specialist Group (SULi - a joint initiative of two IUCN Commissions: Species Survival Commission and the Commission on Environmental, Economic and Social Policy) is working with partners to develop thinking and guidance on how to support local rights and livelihoods in ways that will reduce poaching and other destructive practices, and promote conservation.



Project Piaba Best Handling Practice training session under way in Barcelos, Rio Negro. PHOTO: COURTESY OF PROJECT PIABA

Where the economic and social value of wildlife for local people is positive, in general, they are more likely to be motivated to actively support efforts to combat and manage poaching and illicit trade. But where local people have no stewardship rights for wildlife and gain no benefits from it, strong incentives for illegal and unsustainable use can exist. This is particularly true where wildlife has high value in illegal trade and/or where conservation imposes costs (including opportunity costs). Even the most focused and well-resourced enforcement efforts (which few countries can afford or have the political will to implement) will struggle to effectively promote conservation in the face of strong incentives for complicity by local people. Conversely, effective enforcement depends critically on local support, particularly the provision of intelligence.

The IUCN and other global conservation organizations are seeking examples of where communities residing in regions of biological importance can meet basic livelihood needs in a sustainable way. In the case of sustainable fisheries for the aquarium trade, there are examples that go beyond meeting these objectives, where trade results in an effective driver of environmental stewardship.

The fact that many of these fisheries have been ongoing at stable levels for generations provides evidence that the resource of aquarium fish, and access to the global market, is a reliable basis for sustainable use. The longevity and reliability of the industry also provides economic assurance to communities, which can be quite meaningful when compared to regions without stable livelihoods, where poverty and hopelessness are widespread. This is likely to

have a significant impact where, otherwise, there would be hardship and very threatening circumstances for biodiversity.

The aquarium industry and its market are subjected to a variety of external influences. A significant force is public perception of environmental impact. IUCN SULi is aware of, and commends, the efforts of Ornamental Fish International and its members to spotlight and promote these examples of fisheries where there are socio-economic and environmental benefits. We look forward to deepening our partnership to promote sustainability and sustainable local livelihoods.

Rosie Cooney
Rosie Cooney

Chair, IUCN CEESP (Commission on Environmental, Economic and Social Policy)/SSC (Species Survival Commission) Sustainable Use and Livelihoods Specialist Group & Interdisciplinary Environmental Studies, University of New South Wales.

e-mail: rosie.cooney@ext.iucn.org

*c/ International Union for the Conservation of Nature
Rue Mauverney 28
Gland, Switzerland*

Where harvesting is carried out sustainably, ethically and respectfully, everyone benefits, including all types of reef inhabitants and visitors.

PHOTO: JOHN DAWES



Project Piaba: The fostering and advancement of 'good'

PHOTOGRAPHS: COURTESY OF THE AUTHORS, EXCEPT WHERE INDICATED

Scott Dowd, Executive Director, Project Piaba; Chair, IUCN Freshwater Fish Specialist Group, Home Aquarium Fish Sub-group, and MikeTuccinardi, Senior Editor, CORAL and AMAZONAS Magazines; Advisory Board Member, Project Piaba

We are very pleased to have this opportunity to share an uplifting story with you, Project Piaba's trade partners. This is not just an update on the work of Project Piaba, nor is it a re-telling of the story that some of you have heard for so long: that the aquarium fishery of Brazil's Rio Negro not only meets but exceeds the gold standard of sustainability (more on that later). If this is the first you are learning about Project Piaba and the Rio Negro fishery, please check out our website news and media archive at: <http://projectpiaba.org/news-media/>

As a stakeholder in the aquarium trade, and even more so as active OFI members, the story of *Project Piaba* is your story. You should be proud of the industry and its global impacts. We hope you can, from time to time, reflect on the role that you play that is so important: without the stream of revenue from the aquarium trade, many people living in developing countries would be faced with hardship. You may want to take a second look at the OATA Report from 2016 and read the case studies: <https://wcof.ornamentalfish.org/>

Numerous challenges

As an industry, we can see indications that there are challenges on our collective horizon. We face increased pressure on the industry from animal rights extremist groups, a shrinking pool of hobbyists (particularly from younger generations) and supply chain challenges – just to name a few. These must be met head-on, proactively, or they will continue to grow in scale, threatening the entire global industry OFI represents.

Unfortunately, the detractors to the industry are, for the moment, winning the battle. With the closure of the Hawaii aquarium fishery, they have gained a substantial win that is



likely to result in even more momentum in their favor. This was a topic we discussed with many industry leaders at the World Pet Association's annual Aquatic Experience show. We lamented the current imbalance in this conflict, where those opposing the trade in aquarium fish have access to significant funds, but whose position is not supported by the evidence. The topic was also discussed at the PJIAC Town Hall meeting at this conference.

It is therefore critical that we continue to work together, both within the industry and with external groups who have a shared interest in upholding science-based fishery and natural resource management and promoting sustainable livelihoods, and to identify and highlight verifiable examples where fishes, ecosystems and, especially, people, would be worse off were it not for their place in the aquarium industry.

The advancement of 'good'

We must spotlight and foster the cases where the industry does result in overwhelming benefit to people and the environment. We

2017 graduates and trainers of Best Handling Practices in Santa Isabel.

have new allies in the mainstream conservation and academic communities (International Union for the Conservation of Nature, World Wildlife Fund, Conservation International, etc.). With the aquarium fish industry and its allied stakeholders working together, we have the ability to characterize the industry for what it can be, and what it is: a thing of 'good', and a thing of 'opportunity'.

The fostering and advancement of 'good' is already well under way. In keeping with *Project Piaba* and the Rio Negro model, we have recently accomplished the following milestones:

- 28 public aquariums are currently showcasing the Rio Negro aquarium fishery, inspiring 30 million fish-loving, disposable income-having public aquarium visitors. There are an additional six public aquariums which are at various stages of developing Rio Negro aquarium fish displays to tell this story to another 4.2 million annual visitors. The story of *Project Piaba* and the

benefits of the fishery have now spread widely enough that more institutions are adding exhibits every month.

- Through funding generously provided by the industry group, the World Pet Association, and the public aquarium, Oceanário de Lisboa, we have developed Best Handling Practices (BHP), which complement OFI standards. We have held, and continue to offer, training courses for rural fishers in the Amazon. Dr. Tim Miller-Morgan, OFI Board Member, has been the principal lead of the BHP initiative and has worked closely with *Project Piaba's* in-country partners to develop and deliver the trainings. Recently, Tim's home institution, Oregon State University, hosted one of the trainers, Arnold Lugo, to assist with two Fish Health Management workshops – one in Washington State and the other at Aquatic Experience in Chicago.
- We are testing a marketing program with the goal of inspiring the next generation of fishkeepers. While, at this stage, our focus continues to be on supply chain challenges and improving fish health, some marketing efforts, including social media, are being tested on a small scale. The opportunity for broader programs will be expanded gradually as the supply chain challenges continue to improve.
- We continue to gather stakeholder inputs from collector to consumer. As is consistent with our mission and work, this strategy is focused exclusively on species that come from the wild. We aim to reach all types of hobbyists, from entry-level aquarists with a small aquarium, to those with a deeper



involvement who are likely to be attracted to larger, more uncommonly seen, species.

A positive conservation message at Aquatic Experience.

In addition to the advances *Project Piaba* and its partners continue to make, we have been able to leverage still more momentum and publicity via the following channels:

- Renowned naturalist and best-selling author, Sy Montgomery, wrote a book on the Rio Negro fishery entitled, *Amazon Adventure: How tiny fish are saving the world's largest rainforest*. This book is part of her Scientist in the Field series, which highlights the work of conservation scientists. These books are aimed at a young audience and are used in many schools, which helps us bring the story of beneficial home aquariums to the next generation. (John Dawes provided a thoughtful review of this book recently in the October, 2017 edition of the *OFI Journal*, Issue No. 85).
- The Indianapolis Prize has recognized the accomplishments of *Project Piaba* by selecting Scott Dowd as one of 32 nominees for this prestigious award for conservation scientists. The final prize is not awarded

until September 2018, but over the course of the year, *Project Piaba* is receiving a great deal of positive coverage. This is another example of the mainstream conservation community now viewing the aquarium industry for positive environmental outcomes. [Editor's Note: See Paul Bakuwell's **Secretary General's Report** in this issue of the *OFI Journal* for some additional details. We, at OFI, offer our warmest congratulations to Scott on what we believe to be, not just a great honor, but a richly deserved acknowledgement of his sterling work.]

- A project to create a professionally shot and edited documentary video is under way and will be shared with the public in the coming months.

And there is still much more that can, and should, be done. It is only through active engagement of the industry and its allies that we can reframe the view of the industry so that these positive aspects and stories are at the forefront of public perception.

Request from *Project Piaba* and the IUCN FFSG Home Aquarium Fish Sub-group

- We are seeking to identify additional examples of where the aquarium trade results in socio-economic and environmental benefit. We ask you to reflect upon your fish providers and the trade partners you have been, and are, in contact with. Indeed, if you follow most wild-caught fishes for the aquarium trade back to the region that they originated from, it is most often a place of biological importance. If, at the place of



Scott delivering the 'Piaba' message at the 2017 European Aquarium Curators' Conference.

origin, environmental conditions are such that it yields fish communities which are represented in the aquarium hobby, it is likely an indicator that where they come from is in good environmental condition. Habitats that support aquarium fish populations are also often within the ranges of critically endangered plants and animals.

- Resident-based fisheries can provide the basis for lasting livelihoods, provided that not just the targeted fish species, but the aquatic habitats, floodplains, and watersheds are also preserved. Returning to the example of the Rio Negro fishery, residents there have seen the aquarium fishery in continuous operation since the 1950s. In other regions where unsustainable and destructive practices are the only means of income, the environment is sure to suffer. Where there is poverty and the desperation that comes from not knowing how one is going to provide for one's family, maintaining a healthy environment is rarely a priority. However, because aquarium fishing communities are so connected to environmental health through their reliance on robust stocks of



The "Dorinha", one of the boats used for the annual Project Piaba expeditions.

PHOTO: NELSON

aquarium fish, there is an effective driver of stewardship. Again, this protection not only benefits wild stocks of fishes, but many other critically endangered species as well. In forest-based fisheries where tropical floodplains are protected, or, at a minimum, unpressured by lack of human development, substantial quantities of carbon remains sequestered and the tropical forests continue to perform their atmospheric scrubbing process.

- To further stress the enormous benefits described here that can be derived from the aquarium trade, we repeat: fisheries that go far beyond mere 'sustainability' are

uniquely powerful drivers of environmental protection, preserve natural habitat that support many other critically endangered species, provide lasting livelihoods, contribute to poverty alleviation and food security, and foster continued carbon sequestration and offsets for climate change mitigation.

- Fisheries for the aquarium trade have for too long been pointed to as a problem, when now we know that they can often be a solution.
- Please contact me, Scott Dowd, directly (sdowd@projectpiaba.org) if you are aware of additional cases where you know of ways that aquarium fish are currently, were at one time, or could potentially be, of benefit in the afore-mentioned ways.

HELP US HELP THEM. MAKE A DIFFERENCE. DONATE TODAY.



The health of Indonesia's reefs is crucial for the survival of coastal communities who depend on natural resources to supply the global marine aquarium trade.

But while the trade provides an important source of income for these communities, it is often based on unsustainable resource use and threatens the health of coastal marine ecosystems.

LINI is committed to ensuring and maintaining a sustainable supply chain - from fishers to hobbyists - to support the longevity of the aquarium industry.

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ADDITIONAL WAYS IN WHICH YOU CAN PLAY A ROLE IN IDENTIFYING AND FOSTERING INDUSTRY MODELS THAT HAVE BENEFICIAL OUTCOMES:

- Find out more about how the wild fishes that you trade in are sourced, and share this information with *Project Piaba* (and the IUCN FFSG Home Aquarium Fish Sub-group), and OFI. Here's the link for sharing information with the IUCN FFSG Home Aquarium Fish Sub-group: <https://goo.gl/j7LcKS>
- Partner with the above to explore and assess sourcing from wild fisheries with potentially beneficial impacts.
- Check our website or contact us for a list of the more than 250 species of wild-caught Rio Negro Fish which are on Brazil's legal export list: www.projectpiaba.org
- Communicate the benefits of the aquarium trade throughout the supply chain to share the story with the hobby and the public.
- Join *Project Piaba* on an annual field expedition (usually late January). ■

ACKNOWLEDGEMENT

We would like to extend a special vote of thanks to Deb Joyce and Tania Taranovski.

Marine environment conservation and the industry

PHOTOGRAPHS: COURTESY
OF THE AUTHOR

Gayatri Reksodihardjo-Lilley, Director-Founder LINI* (*LINI: Indonesian Nature Foundation)

The marine ornamental fishery remains an important source of income for coastal communities in Indonesia, as it directly supports the livelihoods of hundreds of thousands of fishers and fish farmers across the country. New demands for ornamental fish are growing from countries and regions like China and the Middle East, which will therefore place greater pressure on the marine environment that supports the organisms being collected for the market. Unfortunately, there are still collection practices that can do more harm than good, including damaging the reefs and other marine habitats due to poor collecting techniques, the continued use of prohibited cyanide, and careless handling and unreported illegal shipments from island to island within the country.

LINI's objective

It has been our objective, at Yayasan LINI, together with the Indonesian marine ornamental industry, to create a positive change and attempt to fix the problems of over-collecting, environmental destruction and social aspects, all of which negatively impact the fishing communities.

Sadly, in our conversations with the industry, we have found that there are still players who do not have a clue about the problems at the collectors' end, and then how to help to address them. One of the reasons for this is that, for a long time, the majority of these people, beginning at the exporter's end, and then further along the chain, were only engaged directly with their immediate suppliers, i.e. the people nearest to them along the supply chain.

The marine ornamental fishery in Indonesia has long supply chains, and is lacking in integration along these chains. For example, fishers often live in very remote islands, far away from the main buyers, and there could be, at least, two to three intermediate buyers between them and the marine ornamental exporters. It is therefore common for the exporters not to know exactly where the fish they buy are being collected from, and by whom.



Training under way at the Center.

This does not apply to the coral trade, as the Government requires a letter of origin of the specimens in trade, as part of the Indonesian CITES Management Authority measures to control the coral

trade in the country. However, since the trade in marine reef fish is not yet regulated, there is no legal requirement for traceability, e.g. the origin of the individuals and species collected.

LINI's role

This is where Yayasan LINI comes in. From the start, LINI has offered to help the industry to participate actively in conservation efforts, reasoning that a well-managed and monitored trade is not only good for the conservation of the marine resources, but also for good business. LINI takes a practical approach by working together with the marine ornamental industry to develop means that are better for both the continuity of livelihoods and the environment, which the industry ultimately still relies on. We believe that, with active industry involvement, we can magnify our efforts for positive change.

In the last five years, we have developed a number of conservation programs within the scope of community development and training. Encouragingly, several Indonesian marine ornamental fish companies have already come forward to talk with us, and they have shown a keen interest in supporting our activities. We all know that over the years of using destructive collection methods, many of the reefs where collection took place were damaged. Make no mistake: our coral reefs are a dwindling resource, and with the added threats of land- and sea-based pollution, allied to sea warming that causes coral bleaching, it is vital that all who make a living directly or indirectly from the marine resources found there understand the need to conserve them!

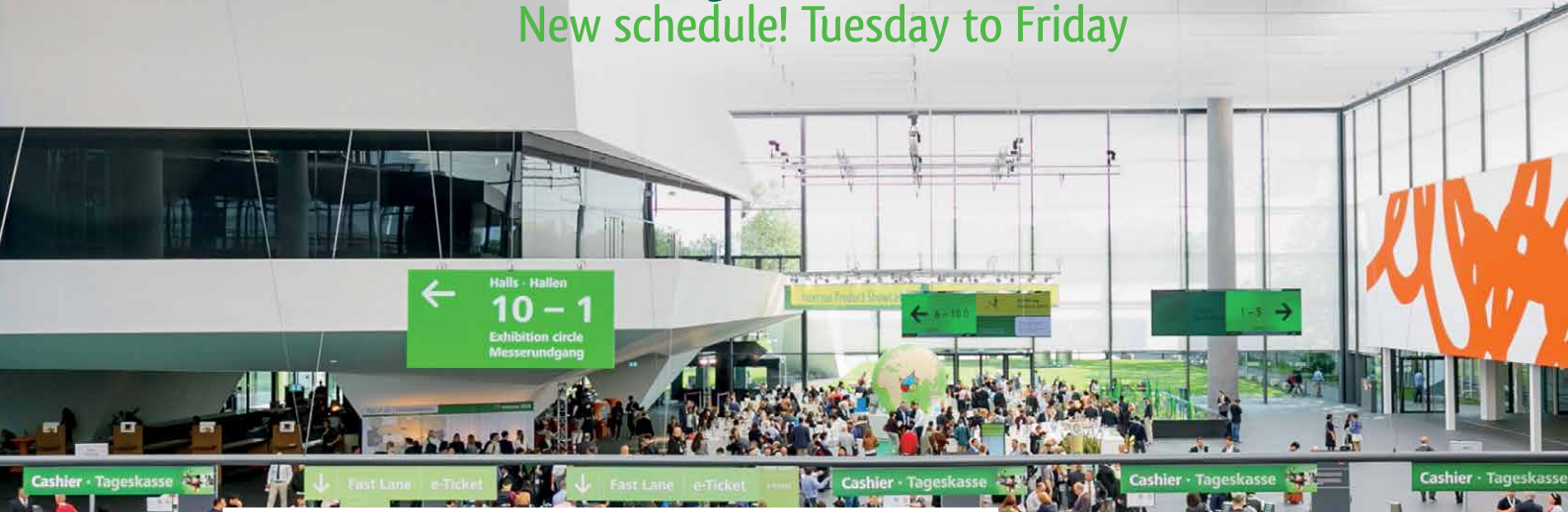
In 2010, LINI initiated a program with local ornamental fishers to rebuild the reefs, with the aim of restoring fish habitats near to the collectors' villages. Since then, many exporters have visited our Training Center in north Bali, and have contributed towards the costs of the making and deploying many artificial reef structures. Now that several players in the industry have contributed towards the rebuilding of the reefs, over 2,000 artificial structures have been installed on the damaged reef flat in front of Les Village, North Bali, at depths from 5 to 30 meters. Of course, the sea is vast, and our efforts are necessarily limited. Nevertheless, our reef restoration work has become a model for others to replicate elsewhere.



Interzoo 2018

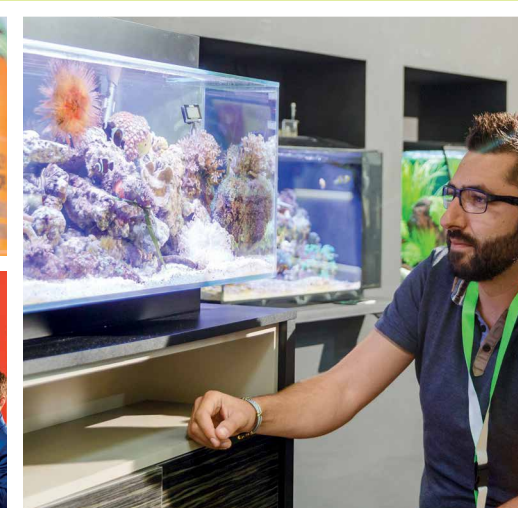
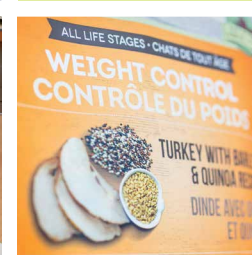
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Community-based center

In early 2015, one concerned marine ornamental businesswoman, who owns Blue Star, kindly supported LINI in setting up a community-based Aquaculture and Training Center in North Bali. The development of the Center is a response to the need to reduce the destruction of Indonesia's globally important coral reefs, and to create incentives for reef management and conservation that benefit local stakeholders who depend on coral reef resources for their livelihoods.

Situated on the north coast of Bali, the Center offers hands-on training to coastal communities and fish industry personel, as well as university students, to improve their knowledge of, and experience in, aquaculture, including breeding, rearing and marine habitat restoration. It also functions as an educational resource for schoolchildren and the general public.

In July 2015, the Center received the first batch of broodstock of Banggai cardinalfish (BCF - *Pterapogon kauderni*), and the first babies were produced in September 2015. The BCF is a species of reef fish endemic to the Banggai Archipelago in Northeast Sulawesi, Indonesia, and has a very limited geographical range.

The BCF was chosen as the first fish species to be bred at the Center because it is a popular marine aquarium fish that has been exploited for overseas markets since the mid-1990s. The unsustainable harvest of this species has contributed to the decline of the populations in its natural habitat, and has led to concerns that it would become extinct. IUCN listed it as an endangered species in 2007, and it was proposed for Appendix II CITES listing during CoP 14 in 2007 and CoP 17 in 2016. It was not, however, listed in this Appendix in acknowledgement of LINI's ongoing conservation program for the species.

Besides concerns about overharvesting, several other potential and current threats may be exerting a significant negative impact on BCF populations within their geographical range. These include habitat loss due to destructive fishing for human consumption and



BCFs photographed among anemones in the wild.

Captive-bred BCFs.



the overcollection of sea urchins and anemones, both being micro-habitats in which the BCF babies and juveniles live.

The Center aims to offer training on reef restoration and the development of a sustainable fisheries program, which will create significant economic and environmental benefits for the local communities. It will also support the fishers in maintaining their livelihoods through sustainable resource use and the rehabilitation of marine habitats.

Buy a Fish, Save the Reef

To help overcome the problem of further declines in numbers of marine ornamental fish, and to restore the reefs as habitats for many fish, LINI has initiated a 'Buy a Fish, Save the Reef' project. From the results of captive breeding, the Center can offer captive-bred and tank-raised marine aquarium organisms to buyers.

From the sale of these products from the aquaculture training program, we hope to generate sufficient income to cover the operational running costs of the Center, and to enhance our marine conservation activities for the future.

The supply chain of Independent Aquatics, a UK-based importer, has championed the 'Buy a Fish, Save the Reef' project, and is helping us to promote the training Center and distribute the Banggai cardinalfish to the Maidenhead Aquatics stores across the UK. In the last two years, Maidenhead Aquatics and Independent Aquatics have given donations to LINI, based on the sale of each box of fish purchased from the Bali-based supplier, Bali CC. With this support, the project is able to build and deploy more artificial reef structures to enhance fish habitats where the ornamental fishers at Les can collect fish for the aquarium trade.

These are just a few of the examples of how the marine aquarium industry can influence, and is influencing, change in the marine ornamental fishery in a significant and positive way. We, at LINI, would like to encourage more retailers, importers and exporters to follow the example of those industry players who have recognized the benefits to themselves of helping efforts such as ours. After all, the responsibility for preserving the marine environment lies with all concerned. Together we can make a change! ■

Conservation and management of Indian ornamental fishes

PHOTOGRAPHS: COURTESY
OF THE AUTHOR

Mini Sekharan. N, PhD, Assistant Professor, School of Industrial Fisheries, Cochin University of Science and Technology, Kochi, Kerala, India

The “niche segments” for Indian ornamental fishes in the international market have remained stable irrespective of stiff competition from other countries which breed and market these species. The demand trend is expected to be on an increase, and it is high time that initiatives are undertaken to conserve or sustainably market these species.

The tropical climatic conditions and the wide geographical variations in India favor rich diversity among ornamental fishes, with researchers having listed more than 700 freshwater fishes, of which about 300 are on the export list. *Sahyadria denisonii* (*Puntius denisonii*), *Carinotetraodon travancoricus*, *Botia striata*, *Botia lohachata*, *Channa* spp. and many others, are just some of the Indian fishes which enjoy good demand in international trade.

On taking a look at the channels of distribution of fishes from the country's water bodies, we can see that the fishers are the primary link in the trade of wild-caught Indian ornamental fish. Small-scale ornamental fisheries form an alternative livelihood option for people who reside near rivers and have expertise in fishing, and who carry out collecting as a part-time activity. These fishers supply ornamental fish exporters, as the supply of indigenous ornamental fishes from the breeding sector is very low, or almost nil. Breeders are reluctant to produce Indian ornamental fish, since they don't fetch a good price on the domestic market when compared to exotic ornamental fish. Even though the breeding of a large number of Indian ornamental fishes has been standardized by research and academic institutions, they are not produced on a commercial scale for trade.

Herculean task

In a country like India with such a large number of water bodies, fishing areas, fishes and fishers, ensuring conservation and a sustainable ornamental fish trade represents a Herculean task. Collectors living near rivers do not belong to fisherman communities, as those dwelling near the sea do, and so, they cannot access any assistance provided by the Indian Fisheries Department. Further, as these ornamental fishers are not breeders, they are not able to avail themselves of assistance from the schemes managed by the Marine Products Export Development Authority (MPEDA), National Fisheries Development Board (NFDB) or any such organizations.

This poses great difficulty in organizing the fishers residing near rivers for trainings, awareness programs on the significance of

indigenous ornamental fishes, and the need for using sustainable collection methods for ornamental fish. Yet, these fishers and stakeholders have to be trained on best handling practices, acclimatization techniques, techniques for improving the quality of fish, optimal packing for long distance transportation, conservation of resources, and other activities related to sustainable trade. Stakeholders in the channels of distribution of Indian ornamental fishes also need to understand the significance of the World Conservation Union (IUCN) classification for Indian ornamental fishes, CITES regulations and Appendices, the workings of the World Organization for Animal Health (OIE), quarantine and biosecurity, and a host of other factors affecting trade.

The increasing trends in the ornamental fish trade have given rise to serious concerns about ornamental fish collection causing a major threat to wild populations, resulting in biodiversity loss. Yet, in reality, there are a number of issues that pose threats to wild populations and biodiversity, such as pollution, deforestation, damming of rivers, drying up of rivers in extreme summers, expansion of tourism, habitat destruction, industrial activities, destructive



India's Western Ghats are a major source of endemic species of interest to the worldwide industry.

collection techniques or illegal fishing (dynamiting and poison fishing), release/introduction of non-native (alien) invasive species of fishes and plants, over-exploitation, threat of extinction of target species due to selective over-harvesting, and so on.

All this points to the fact that it, obviously, is not the ornamental fish trade alone that poses a threat to biodiversity. People residing near rivers also depend on fishes considered to be ornamental (*Danio malabaricus*, *Rasbora daniconius*, *Channa* spp.) for food purpose, as many of them are unaware of the use of these species as aquarium fishes. Even the endangered, indigenous red-line torpedo barb (*Sahyadria denisonii*) and *Horabagrus nigricollaris*, are considered palatable by people residing near rivers. Food fishes are caught and sold in kilograms, while, in the case of ornamental fisheries, fishes are caught and sold in numbers.

In India, it is the domestic ornamental fish trade (dealing with exotic ornamental fishes) which is large. Indeed, on examining the export statistics, it can be seen that the total value of exports of ornamental fish from India is very low. For example, in the year 2015-2016, the total export value of ornamental fish was just US\$1.04 million.

Export from the country takes place with stringent export documentation and customs inspections. Imports and exports of species notified to customs by wildlife officials are strictly prohibited, and species listed in the CITES Appendices need to be monitored or controlled.

Fishery conservation management activities

In India, matters related to fish conservation generally come under acts, such as the Wildlife Protection Act, 1972, the Biological Diversity Act, 2002 and Inland Fisheries Acts.

Wildlife Protection Act, 1972 – This legislation was enacted for the protection of plants and animal species. It lists protected species and prescribes regulations for the hunting or harvesting of wild animals. As per the act, only tribal communities residing in forest areas have permission to fish from the rivers in those areas. There is, thus, a need for monitoring the ornamental fishes captured and sold by these tribal communities. Sales can also be regulated through cooperative societies to ensure that tribal communities are able to obtain a fair share.

The marine ornamental fish trade in India has always been much smaller than the freshwater one, owing to the restrictions imposed by the Indian Wildlife (Protection) Act, 1972. This act needs to be amended to incorporate those fishes which are endemic and endangered, and, thus, need to be conserved.

Biological Diversity Act, 2002 - India is a Party to the Convention on Biological Diversity (CBD), which recognizes the sovereign rights of states to use their own biological resources. In order to help realize the objectives of CBD, India has enacted an umbrella legislation called the Biological Diversity Act 2002 (No.18 of 2003) aimed at the conservation of biological resources and associated knowledge,

as well as facilitating access to them in a sustainable manner and through a just process.

Indian Forest Act (1927) – This consolidates the law relating to forests, the transit of forest produce and the duty which can be levied on timber and other forest produce.



The red-line torpedo barb: perhaps India's most iconic species.

Export ban for *Sahyadria denisonii*

The seasonal ban on the red-line torpedo barb (*Sahyadria denisonii*) was recommended by the Department of Fisheries in the state of Kerala when it issued an order restricting the collection and export of the species from the rivers of the region. Management measures put forward included quotas, restrictions on gear, catch size and a seasonal closure of the fishery during the breeding months.

These management measures seem to have resulted in a negative effect, i.e. with the exports for Kerala getting shifted to the neighboring state, Karnataka, and the trade of species, such as *Sahyadria denisonii*, increasing in domestic markets and leading to increased collection from the wild.

Green Certification

In 2011, MPEDA formulated a Green Certification for the sustainable marketing of Indian ornamental fish. This Green Certification aimed at creating a new image of the chain of custody in the Indian ornamental fish industry. In Green Certification, protocols and procedures for wild capture areas, primary holding facilities, secondary holding facilities, breeding and culture facilities, as well as export facilities, were listed.

However, even after framing and publishing the report, no attempt has been made to implement Green Certification in the country. If the procedures were to be simplified, stakeholders and fishers would be able to practice it during their day-to-day activities in the sustainable marketing of Indian ornamental fishes.

Academic and research institutions

At present, the breeding of large numbers of Indian ornamental fish has been standardized in the country, and government, research and academic institutions have taken up breeding programs on a

small scale. There is, however, an urgent need to carry out large-scale breeding of those Indian ornamental wild-harvested species which are currently being exported.



Local communities perform a central role in the breeding of aquarium fishes.

Sustainable marketing export house

The Kerala government established an ornamental fish export company, Kerala Aqua Venture International Ltd (KAVIL), to market/export Indian ornamental fishes sustainably. Training was given to satellite farmers from whom fish for export were obtained via a buy-back system. However, at present, the company has ceased exporting indigenous species and breeds exotic fishes for trade instead. Yet, institutions like KAVIL can take up large-scale breeding programs for Indian ornamental fishes and market them sustainably.

Closing remarks

Fisheries institutions in India have, for years, given immense support to the ornamental fish breeders and exporters through empowerment activities, and this has benefitted the domestic ornamental fish trade in a significant way. Nonetheless, initiatives have to be undertaken to establish breeding centers for the large-scale breeding of Indian ornamental fishes which enjoy demand in the international markets. Fishers and stakeholders involved in activities dealing in Indian ornamental fish have to be organized and empowered towards a sustainable ornamental fish trade.

Management strategies and conservation actions that can be planned for the sector include: policy-based actions (management plans, legislation development, community management or governance, resource stewardship, livelihood alternatives), communication and education (awareness and capacity building), research actions (population studies, habitat status, use and harvest levels, conservation measures, trend/monitoring), habitat- and site-based actions (maintenance/conservation), protected areas, (establishment and management, community-based initiatives) and species-based actions (sustainable use, recovery management, *ex situ* conservation actions, captive breeding and artificial propagation).

If the industry is to clarify the notions of conservationists and animal right groups regarding Indian ornamental fishes, the sector and the authorities have to take up initiatives for conservation and sustainable trade in an effective manner. ■



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Apistogramma sp. "Marandu"

www.aquariumglaser.de

Praise for responsible trade in ornamental fish

As a retired senior fishery officer from the Food and Agriculture Organization of the United Nations (FAO), I am pleased to write this letter in support of the responsible trade in, and use of, ornamental fish.



LINI at work on an Indonesian reef.

PHOTO: COURTESY OF LINI

The strategic objectives of FAO are to end hunger and poverty, promote sustainable use of natural resources, support stable markets and help countries respond to natural and human-induced disasters. Aquarium fisheries can be an important element in achieving these objectives. Collection and trade in aquarium fisheries can provide stable and secure livelihoods in developing countries, helping to alleviate poverty. Maintaining habitat for aquarium fisheries can also encourage the preservation of biodiversity and natural systems, thereby ensuring that productive natural resource bases (i.e., clean water and air, healthy soils) are available to sustain healthy communities. These natural resource bases are critical for addressing food security, both locally and globally. (<http://www.fao.org/about/what-we-do/en/>)

Global statistics reported to FAO from Member Nations indicate that the export value in 1996 of ornamental fishes was US\$206,603,000, while the import value was US\$321,251,000. The per kilo export value of aquarium fish is often significantly greater than that of food fish. Since 1985, the value of the international trade in ornamental exports has increased at an average growth rate of approximately 14% per year. Given that developing countries account for about 63% of the export value, these figures demonstrate significant potential for the ornamental fish industry, when developed responsibly and sustainably, to play an even greater role in building livelihoods and addressing poverty alleviation. (<http://www.fao.org/docrep/005/x4933e/X4933e10.htm>)

Despite the actual and potential benefits of the aquarium fish industry, there are also risks and challenges that must be met head-on. For example, the farming of ornamental fish may remove pressure on wild populations, but it also threatens to undermine the incentives to protect habitat, as well as displace the financial

benefits from developing countries where the fish originated. Over-fishing and harmful fishing practices still occur in some areas, and threaten the long term health of the fisheries and the habitats on which they, and the fishers, depend.

The work of groups such as *Project Piaba* in the Brazilian Amazon, the *LINI Project* in Bali, and others that encourage sustainable growth of the aquarium fish trade are therefore critical to helping achieve the goals of FAO. *Project Piaba*, operating in the Rio Negro region of Brazil, is working with local fishers to encourage best handling practices, increase incomes for fishers, and demonstrate additional benefits of a sustainable fishery, such as habitat protection and carbon storage (critical in the efforts to combat climate change). The *LINI Project* is working with fishers, governments, and local communities in Indonesia to develop and promote sustainable fisheries by increasing the health of coral reefs, improving fisheries management, and developing marine conservation areas. These local and regional efforts are essential to support, scale up, and promote to ensure the longevity and full potential of the aquarium fish industry.

Up to date information on the scope and impact of the ornamental fish sector is incomplete. Although member countries of FAO report fishery and aquaculture statistics, they often do not report information on ornamental fish. The work of the above groups and OFI can contribute to filling this information gap and help make the ornamental fish industry a sustainable and responsible industry now and in the future.

Sincerely,

Devin M. Bartley, PhD

Retired Senior Fishery Resources Officer

Food and Agriculture Organization of the United Nations, Rome, Italy.



Cardinals photographed in the wild during a Project Piaba trip.
PHOTO: JOHN DAWES

EU-related issues

Nathalie Gamain, OFI EU Affairs Officer

Several hot topics related to the ornamental aquatic industry have been on the EU agenda this past fall, with, among others: the *Batrachochytrium salamandrivorans* (Bsal) disease, the review of the 2nd update of the Invasive Alien Species (IAS) EU List of Concern, and the CITES Standing Committee preparatory meeting.

Batrachochytrium salamandrivorans (Bsal) disease

Following the Bsal pathogen-dedicated European Food Safety Authority (EFSA) report published last February, and then its recognition as a disease by the World Organization for Animal Health (OIE) last spring, OFI has collaborated extensively with the Ornamental Aquatic Trade Association (OATA, UK), the Reptile and Exotic Pet Trade Association (REPTA, UK), the Pet Industry Federation (PIF, UK), and the Deutsche Gesellschaft für Herpetologie und Terrarienkunde e.V. (DGHT, Germany) to study and assess the Bsal situation within the ornamental aquatic trade.

The results have been shared with the respective EU authorities in order to enable them better to assess the current situation and avoid, if possible, any drastic trade measures, such as a ban on imports. In addition to these, OFI has participated in further discussions on Bsal, with the support of the OATA team, in order to share the industry's expertise and practical experience on the salamander trade, import and transportation.

What we can say and understand at this stage – information to be taken cautiously:

- The OIE is working on a dedicated and new chapter of the Aquatic Code. It should have published a Bsal disease technical card on its website by the time we go to press with this publication.
- In parallel, the EU authorities are studying various options for handling the Bsal situation.



Water lettuce in bloom.

PHOTO: JOHN DAWES

Due to the biosecurity risk Bsal presents, we understand that the EU was planning to introduce new controls on imports of salamanders and newts before the end of 2017 (but after we went to press with this issue of the *OFI Journal*). Member States should have taken a final decision and a respective vote, at the end of November - beginning of December 2017, to decide which measures to implement. This decision could include new requirements at export and import, minimum consignment sizes and (potentially) some form of quarantine procedures.

We encourage you to follow the EU decision, vote and respective outputs within our regular **Members' Update** editions.

REFERENCE DOCUMENT

The EFSA report "Scientific and technical assistance concerning the survival, establishment and spread of *Batrachochytrium salamandrivorans* (Bsal) in the EU", is available at: <http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2017.4739/epdf>

Invasive Alien Species (IAS)

Last October, the Scientific Forum met in order to study the proposals made for the 2nd update of the IAS EU List of Concern.

This means that the Scientific Forum members, composed of the scientific community's representatives appointed by Member States, had the possibility to express their opinion for all species proposals made for this 2nd list update.

Out of the eleven species proposals made for this 2nd list update, five raise the industry's concern:

- *Channa* spp. (snakeheads)
- *Gymnocoronis spilanthoides* (Senegal tea plant)
- *Hygrophila polysperma* (Indian waterweed)
- *Salvinia molesta* (salvinia)
- *Pistia stratiotes* (water lettuce)



Salamandra salamandra exhibiting severe symptoms of Bsal around the mouth.

PHOTO: FRANK PASMANS

In order to prevent such species listings as much as possible, OFI is actively engaged with the EU authorities, sharing its concerns and position against such listing. With the expertise provided by OATA throughout the given Risk Assessments (RA) for these five species, OFI promotes a regional approach management, rather than the EU level one suggested by the listing proposals. OFI also opposes any listing proposal based at genus level, as proposed for the *Channa* spp. by Spain.

In addition to these RA arguments, OFI has also shared with the EU authorities a second, common position agreed with the European Pet Organization (EPO).

The 9th meeting of the IAS Committee should have met in early December 2017 for a first discussion and a second update of the IAS EU List of Concern. It shall meet again in the second quarter 2018 to vote on the 2nd update of this list.

The IAS Committee is composed of representatives of all Member States, and its main role is to assist with the implementation of the IAS Regulation.

Last but not least, it is important to remind you that the deadline for proposals for the 3rd update of the list is on February 10, 2018. Based upon this schedule, both the 2nd list update vote and the proposals for the 3rd update of the list are on top of our agenda for 2018.

FOCUS: Risk Assessments (RA) shared for the five (5) species of concern

Based on OATA's expertise and input, the respective RA emphasized the following:

- *Channa* spp. (snakeheads): "We support a specific biogeographically limited listing in relation to the prohibition of *Channa argus* (Northern snakehead) due

to its wide thermal tolerance range. However, we oppose any listing that is made at genus level, as many *Channa* species are tropical/subtropical. Risk Assessments must be made on a species by species basis in relation to pertinent EU biogeographical areas, fully assessing environmental factors, climate matching, genetic diversity via effective population size and establishment success via propagule pressure” (OATA Risk Assessment, April 2017).

- *Gymnocroronis spilanthoides* (Senegal tea plant), *Hygrophila polysperma* (Indian waterweed), *Salvinia molesta* (salvinia), and *Pistia stratiotes* (water lettuce): “We commend the authors of the individual Pest Risk Analysis (PRA) for the plant species given above in relation to their robust analysis and considered approach.

“We support the approach that the evaluation of potential of invasiveness is considered on the basis of pertinent biogeographical areas within the EU. As it currently stands, we believe that these four aquatic species do not have the potential to become invasive in the UK or, indeed, much of the more northerly Member States of the EU.

“We endorse the recommendations made in each PRA, as we understand them as below:

- *Gymnocroronis spilanthoides* (Senegal tea plant) – prohibition of import, ban from sale, list as a quarantine pest within the defined endangered area i.e. countries bordering the Adriatic Sea and the Eastern Mediterranean, as well as parts of Morocco and Algeria.
- *Hygrophila polysperma* (Indian waterweed) – recommendation that it is monitored where it occurs in the wild and review of the PRA every 10 years, or as and when further information becomes available for the endangered area (small areas of Turkey, Greece and Algeria).
- *Salvinia molesta* (salvinia) – prohibition of import, ban from sale, list as a quarantine pest within the defined endangered area i.e. Mediterranean biogeographical region.
- *Pistia stratiotes* (Water lettuce) – prohibition of import, ban from sale, list as a quarantine pest within the defined endangered area i.e. Mediterranean biogeographical region”. (OATA Risk Assessment, April 2017).

REFERENCE DOCUMENTS
 OATA Response to EU Non-Native Species Risk Analysis on *Channa* spp. (snakeheads), and OATA Response to the Pest Risk Assessments on the four aquatic plant species: *Gymnocroronis spilanthoides* (Senegal tea plant), *Hygrophila polysperma* (Indian waterweed), *Salvinia molesta* (salvinia), and *Pistia stratiotes* (water lettuce).

CITES
 Last October, the EU organized a consultation meeting with its stakeholders, including OFI, to prepare the EU participation at the 69th meeting of the CITES Standing Committee (SC).

Based upon the agenda of this CITES SC meeting, OFI got the opportunity to express its position towards a series of raised items. Among them, were the following *listing of aquatic species*:

- The importance of including trade representatives, and this, on an equivalent precedence, among the consulted stakeholders if non-governmental environmental bodies are consulted.
- The primacy of assessments from experts over political objectives.

Institutional, regulatory and compliance matters:

- Enforcement: Closer collaboration with the trade should be positively foreseen as part of the solution in order to tackle illegal wildlife trafficking.
- Cybercrime: Proactively emphasize the importance of the trade’s activities.
- Captive-bred and ranched specimens: Highlight the role of the industry with expertise on various species.
- Appendix III: Address the certificate of origin format and content discrepancies from one region of the world to another one.

Other issues:

- Livelihood issues: Consideration of livelihood issues in any amendments to CITES Appendices: This consideration is important, as sustainable use is, indeed, broadly recognized as an important incentive to conservation. CITES must be careful to avoid removing such incentives where they exist, such that it has a negative effect for the species. Particularly in poor rural areas, damaging or removing sustainable livelihoods can have a very negative effect

on the general conservation of species, as well as on habitats and the surrounding environment by forcing people into environmentally destructive activities.

- Community awareness on wildlife trafficking: Raise awareness levels within rural communities, which play a key role in tackling illegal wildlife trafficking.
- Code of responsibility for NGOs participating in CITES meetings: This is a very important issue to consider, as, over the years, the increased interest in the issues discussed by CITES has led to increased high-pressure lobbying by many NGOs. Sometimes, their actions may make other legitimate attendees uncomfortable in representing their views. All representatives at such meetings should be given equal and unpressured opportunity to present their views.

Following this CITES SC preparatory meeting, OFI has consolidated its position with European Pet Organization (EPO). It has then been shared with the EU representatives. ■

The role of the industry in connection with captive-bred specimens, such as this tiger oscar, should be taken into consideration in CITES SC discussions. PHOTO: JOHN DAWES



REFERENCE DOCUMENTS
 Agenda of the 69th CITES Standing Committee: <https://cites.org/eng/com/sc/69/index.php>
 OFI and EPO Common Position to the 69th CITES Standing Committee

ROLE OF THE CITES STANDING COMMITTEE
 “The SC provides policy guidance to the Secretariat concerning the implementation of the Convention and oversees the management of the Secretariat’s budget. Beyond these key roles, it coordinates and oversees, where required, the work of other committees and working groups; carries out tasks given to it by the Conference of the Parties; and drafts resolutions for consideration by the Conference of the Parties” (CITES)

Update on the ornamental aquatic export industry 2016: trade data and conservation

Shane Willis (OFI President) and Paul Bakuwel (OFI Secretary General)

Industry sources estimated that, in the 1990s, between 8-13% of households had aquaria in the major markets of Europe, the USA and Japan, and that there were an estimated 100 million hobbyists throughout the world. The industry has seen some fluctuations in fortunes over recent times and, to some degree, has shown little growth in some markets since the Global Financial Crisis. There has also been some consolidation within the industry, and we have seen some old operators ageing out of the business. However, while there are few data on current aquarium keeping trends, there is no doubt that the hobby is still a significant pastime in Western markets and that it is expanding in popularity in the Middle East and Asian markets.

The ornamental aquatic industry can be roughly divided by origin into captive-bred and wild-caught ornamental aquatic organisms. The aquarium trade in wild-caught aquatic organisms is a livelihood activity for people in remote areas of many developing countries, where it provides socio-economic incentives to preserve the habitats they depend on.

The export data presented in this paper also reinforce that the supply of the vast majority of these fish originate from developing countries in Asia, the Pacific region, Africa and South America. Many of the fish are sourced from artisanal fishermen and small-scale farmers who rely on our industry for their livelihoods. It is especially the trade in wild-caught fish that benefits local communities, often in remote areas where there are few income-generating alternatives. A ban on the collection of wild-caught ornamental aquatic species would, thus, deprive thousands of people of their livelihood and would turn them to less sustainable/environmentally-friendly alternatives.

Where do we get trade statistics from?

As many authors have indicated, accurate trade data on the ornamental fish industry are difficult to obtain, owing to a variety of reasons. It is generally considered that FAO data, presented in the **United Nations Commodity Trade Statistics Database** which can be accessed at: <https://comtrade.un.org>, are the most accurate. Trade figures are tracked using the **Harmonized Commodity Description and Coding System**, or HS codes.

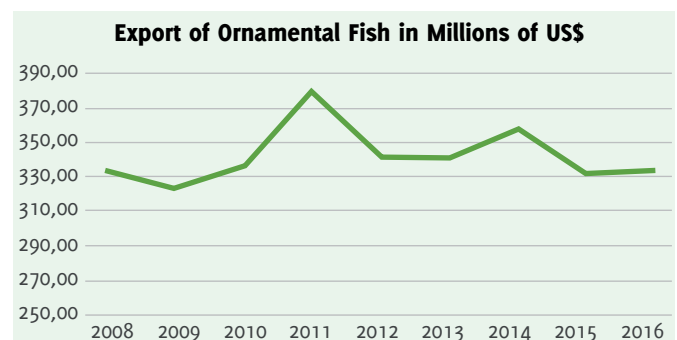
According to UN Comtrade, in 2016 the ornamental fish industry included 128 countries in the collection, breeding, import and export of ornamental fish, with a total value of \$333 million. The number of fish traded is estimated to be approximately 1.11 billion per annum, based on an average export value of \$0.30. A total of 128 reporting countries seem to be low, compared to previous years when 140 to 150 countries were reporting trade in ornamental fish. The apparent decrease in the number of countries trading is not apparent in the overall value and quantity, and could reflect subtle changes, such as a lack of reports from some of the smaller countries involved in the trade.

The quality of these data depends on how accurately figures are processed by, among others, Customs and Border Inspection Posts

(BIPs). During the preparation of this article, we encountered data that do not reflect the actuality of our trade, and similar observations were made by Gerald Bassleer in a previous update on the ornamental aquatic industry (see *OFI Journal*, No. 77).

Comtrade provides the following limitations to the available data:

- Countries (or areas) do not necessarily report their trade statistics for each and every year... UN Comtrade does not contain estimates for missing data. Therefore, trade relating to a country group could be understated, owing to the unavailability of some country data.
- Data are made available in several commodity classifications, but not all countries necessarily report in the most recent commodity classification for ornamental fish.
- Imports reported by one country do not coincide with exports reported by its trading partner. Differences are due to various factors, including valuation (imports: CIF, exports: FOB).



The industry has suffered two significant declines over time, once in the late 90s and again in 2009. The latter was due to the Global Financial Crisis. Yet, despite these dips, global ornamental fish exports have shown resilience, stabilizing and then rebounding to higher levels each time. Industry analysis does suggest, however, that, despite the stabilization and recovery from the most recent dip, the degree of recovery varies between countries, which is largely a reflection of their economic status.

Prior to 2012, the HS code for ornamental fish was HS:030110. Since 2012, though, there has been a distinction between freshwater and marine ornamental fish:

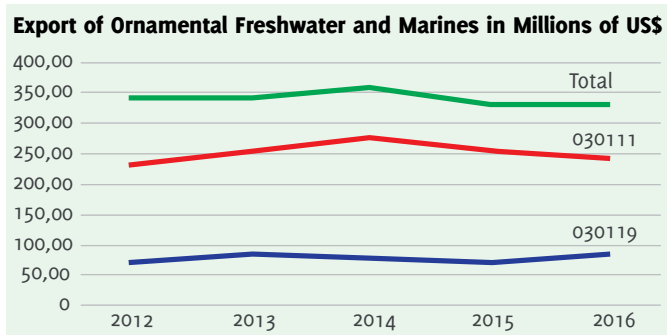
- HS:030111 - Freshwater ornamental fish
- HS:030119 - Marine ornamental fish

Nonetheless, although the distinction between freshwater and marine ornamentals was introduced in 2012, a small quantity of exports is still being reported under the general code of 030110. There are also instances where other commodities have been incorrectly allocated to these codes.

One of the accompanying graphs illustrates the value of exports of marine versus freshwater fish from 2012 to 2016 (data for 2016 may still be incomplete, owing to the reporting cycles of some countries, and is likely to be higher than stated here). The graph indicates that the value of exports of marine fish has remained fairly steady over the period and, even, slightly increased, whereas freshwater imports have trended down over the same period.

This supports the often quoted line that the marine sector is growing faster than the rest of the trade. It should also be remembered that these figures do not reflect the trade in corals and marine invertebrates, which many industry experts cite as also increasing significantly, with current market trends moving towards fewer fish and more corals and marine invertebrates in aquariums.

The other consideration to be borne in mind with these data is that they represent total value only, so there are no data on actual quantities of fish exported. With the continuing trend towards aquascaping and nano tanks, there are more, smaller and cheaper fish being traded in the market. This is likely to drive down the average price of fish, which could result in an apparent drop in the value of exports when, in fact, more fish are actually being traded.

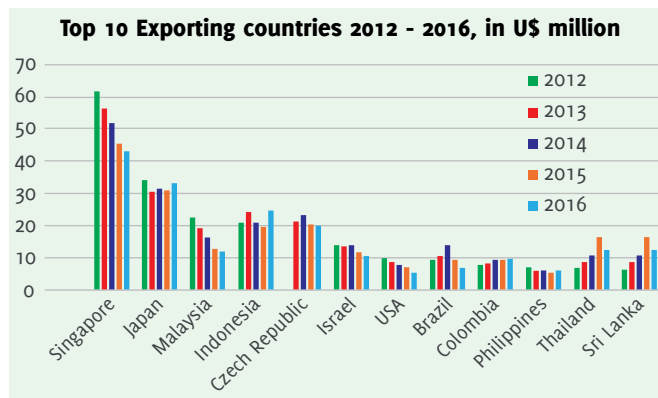


It should be noted that trade in ornamental aquatic plants, ornamental crustaceans and other invertebrates are not captured under these HS codes either; they are generally ‘absorbed’ into other categories. Thus, there are no reliable trade data for these important sectors of our industry.

Major exporters: Singapore and the rest

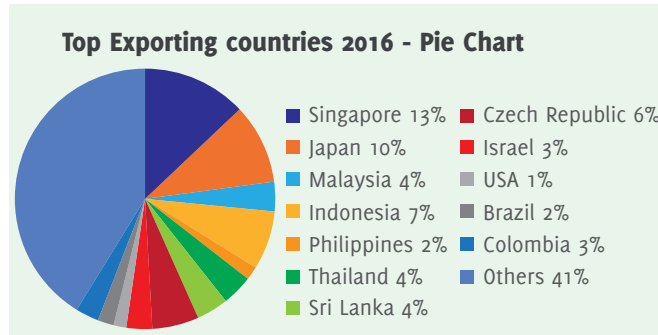
Asia continues to be the major supplier for fish, with Singapore being the single largest exporter in the world in 2016, with a total value of US\$42.9. The dominance of Singapore on a global scale has significantly decreased in the past years, but it still accounts for almost 12.8% of the international trade. Uncertainty regarding land

use within Singapore has probably resulted in this reduction, possibly with relocation to other countries in the region and/or termination of export activities.



Also of interest is the recent increase in exports of ornamental fish from Japan. Comtrade data indicate that all Japan’s exports are freshwater ornamental fish, but it is unclear what these are, so the increase could possibly be explained by higher exports of koi and goldfish. Exports from the Czech Republic have also increased and reflect the strong domestic production that continues in the country, as well as the increased number of fish being imported from Asia and, subsequently, re-exported.

Indonesia continues to be a major exporter, and Sri Lanka has expanded exports significantly in recent times. In fact, Sri Lankan exports have nearly tripled in four years, which is a significant achievement for the industry, with growth in both the marine and freshwater sectors.



Trade in corals and marine invertebrates

As highlighted previously, the trade in corals and marine invertebrates is not captured within the current HS codes and, thus, the figures reported in Comtrade data are not a true reflection of the value of this section of the trade.

Without official data, we are forced to use industry estimates as our primary source, and these put the trade in corals at between 10 and 45% (average 25%) of the value of marine ornamental fish, with the trade in marine invertebrates at between 15 and 25% (average 18%) of the value of marine ornamental fish. Based on this, the export value of this group could be \$15.6million.

Trade in aquatic plants

Currently, there are no statistics on ornamental aquatic plants. In terms of commodity trade data, these are captured under a universal code for all nursery plants. However, aquatic plants make up a significant part of our industry, and with the increasing popularity of aquascaping, it is likely that this trade is, in fact, increasing.

Without official data, we are forced to use industry estimates as our primary source, and these put the trade in aquatic plants at between 5 and 15% (average 10%) of the value of aquarium fish. Based on this, the value of plants could be around \$24million at export level. However, it should also be noted that some markets (e.g. USA, Australia) do not import aquatic plants. They are produced domestically, instead, so the actual value of the global trade is likely to be much higher.



International trade in aquatic plants could amount to more than \$24m at export level.

PHOTO: JOHN DAWES

to estimate the number of people who benefit from trade in wild-caught aquatic organisms, but it probably lies in the high tens to low hundreds of thousands.

It should further be noted that, while many of these people rely solely on income derived from this industry, there would also be many others who derive a part time income as well. In terms of monetary value for these communities, there are, yet again, no data to indicate how much money actually flows into them. However, as 90% of marine and 10% of freshwater fish are wild-caught, it can be estimated that approximately \$101 million (\$24 million – freshwater, and \$77 million - marine) of exported finfish are wild-caught. This value would be significantly elevated when wild-harvested aquatic plants, corals, crustaceans and other invertebrates are included.

It is also difficult to determine how much of this money flows directly through to local fishermen or their communities, but industry sources suggest that this would vary, depending on the length of the supply chain and the country involved, and would be between 8% and 25%. While a figure of between \$8 - 25 million may seem small, this sum has a dramatic impact on local communities, as well as their micro-economies, when annual incomes can be as low as a few hundred US\$ per annum.

This cash flowing towards and through local communities is a real incentive for the conservation of the habitats they depend on for harvesting wild-caught ornamental fish and invertebrates. The benefits of the collection of aquatic organisms are well documented by e.g. *Project Piaba*, LINI and others, as exemplified by their respective slogans: 'Buy a fish, Save a tree', and 'Buy a fish, Save a reef', so we won't address them any further here.

The financial benefits of the industry flowing through to small backyard farmers in these countries should also be considered. Production of ornamental fish on a small scale (i.e. in the backyard) provides a viable income for many homesteaders in developing countries. Indeed, there are examples in most countries that produce and export ornamental fish, of small one man/woman- or family-based farms being the main source of income for families and, even, whole villages/communities that produce fish together to supply exporters. As with people deriving income from wild-caught fish, without the revenue from producing ornamental fish, these communities might be forced to turn to other environmentally destructive activities, such as logging, palm oil plantation developments, or a host of other equally damaging practices. ■



Exports of corals and marine invertebrates could account for over \$15.5m.

PHOTO: JOHN DAWES

Trade in freshwater crustaceans, mollusks and other invertebrates

Freshwater shrimps and crayfish are gaining popularity in the trade, and, particularly with the advent of nano tanks and aquascaping, are taking a growing share of the market. Again, there is no specific HS code for ornamental crustaceans, and any trade is captured under the code for live crustaceans, which is, primarily, the trade in live lobster, crab, etc., for human consumption.

Without official data, we are forced to use industry estimates as our primary source, and these place the trade in aquatic invertebrates at between 1 and 7% (average 4%) of the value of aquarium fish. Based on this, their value could be around \$9.6million at export level. The most important freshwater invertebrates are shrimps.

Benefits for livelihoods and local communities

As with so many other aspects in this trade, data are scarce in this respect, so it is difficult to determine the direct benefits of the trade to local communities. It is also hard, if not impossible,



Estimates indicate that the freshwater invertebrate export market could be worth close to \$10m.

PHOTO: JOHN DAWES

The ornamental fishery as primary driver of local economies

Over the last 15 years, the amount of money spent on pets in the US jumped from \$17 billion to \$43 billion annually. Clearly, people love their animals - and not just their pets either.



The Rio Negro fishery is a prime factor in alleviating poverty in the region and, thus, in the everyday lives of the caboclos. PHOTO: JOHN DAWES

Perhaps this is why biodiversity conservation has attracted so many advocates and so much attention around the world. Newspapers routinely report on the discovery of new species and the demise of others. Nature as theater, both gripping and grizzly, is wildly popular when captured on film.

And yet, conservation biology, the interdisciplinary pursuit of saving wild species and wilderness, is, at best, marginal in the public policy sphere, particularly in development circles. Often, so too is the environment, more broadly. In this marketplace of ideas, conservation is certainly not king, though it should be.

The World Bank's vision is a world free of poverty. As this statement suggests, it is rare that we tackle a problem that is not grounded in poverty.

Three fourths of the world's poor live in rural areas. For many of these people, natural capital - the animals, plants and ecosystems that surround us - is often their primary capital asset. It's the 'Bank' from which they access credit and supplement their paycheck. Need to fund your child's tuition bill? Annual harvest not lasting throughout the year? Catch a cold? Sustainably managed forests, agricultural land, oceans and other natural capital can provide livelihoods, sustenance and remedies.

Saving wild species and wilderness provides food security, generates jobs and revenue flows, and builds resilience against external shocks, or so the theory goes. We are testing this theory at the

World Bank. We are committed to promoting and protecting nature as a local and national public good through our capital, convening services and technical assistance. We are committed to making it relevant in the development marketplace of ideas. Truth be told, we simply cannot alleviate poverty by impoverishing - by design or simple neglect - the natural wealth accounts of rural communities.

I was pleased to hear of the case studies in the aquarium trade in a discussion with Scott Dowd a few years ago at the Word Parks Congress in Sydney. Scott shared the example of *Project Piaba*, where the cardinal tetra fishery in Brazil's Rio Negro serves as an example of the Bank's Theory in practice.

He explained that this species weighs an average of 0.2 grams at capture. It has been documented that, in some years, as many as 40 million cardinal tetras have been captured and exported for the aquarium trade. This amounts to 8,000 kg offtake for a fishery that takes place in an area of 122,476 square kilometers, a very small biological offtake in comparison to the impact on livelihoods. Fishing communities are broadly distributed throughout the region, and the fishery is the primary driver of the local economies. This example of a single species providing a mechanism of income for communities that are cash poor, but biologically rich, falls squarely within the Bank's Theory.

Valerie Hickey

Practice Manager
Environment and Natural Resources Global Practice
World Bank Group

Habitats such as this one, just off an Amazon tributary, contribute ornamental fish on a sustainable basis, thus protecting the rainforest against destructive practices.

PHOTO: JOHN DAWES





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Calendar of events 2018

15-17 March | Iberzoo + Pro-Pet

(Feria Internacional para el Profesional del Animal de Compañía)

Venue: IFEMA, Recinto Ferial en IFEMA, Parque Ferial, Avenida del Partenón, 5, 28042, Madrid, Spain.

Organizer: IFEMA (Institución Ferial de Madrid)

Contacts: Lola González (Director), Beatriz Pérez-Frade (Commercial Manager), Virginia Montouto Sardiña (Secretary), tel.: +34 91 722 5092 (Virginia Montouto), +34 91 722 51 75 (Beatriz Pérez-Frade); fax: +34 91 722 58 04; e-mail: ibzpropet@ifema.es; website: www.ifema.es/propet_01/Informacion_general/presentacion/index.htm

20-21 March | PATS

Venue: Sandown Park, Surrey, England.

Organizer: Impact Exhibitions & Events Ltd., Unit A2 Speldhurst Business Park, Langton Road, Speldhurst, Kent, TN3 0AQ.

Contact: Annie Foord, tel.: +44 (0) 1892 862 848; e-mail: annie.foord@impact-exhibitions.com; website: www.patshow.co.uk

21-23 March | Global Pet Expo

Venue: Orange County Convention Center, Orlando, Florida, USA.

Organizers: 1. American Pet Products Association (APPA), 225 High Ridge Road, Suite W200, Stamford, CT 06905.

2. Pet Industry Distributors Association (PIDA), 3465 Box Hill, Corporate Center Drive, Suite H, Abingdon, MD 21009.

Contacts: 1. tel.: +203 532 0000; fax: +203 532 0551; websites: www.americanpetproducts.org, www.globalpetexpo.org
 2. tel.: +443 640 1060; fax: +443 640 1086; e-mail: pida@kingmgnit; websites: www.pida.org, www.globalpetexpo.org

8-11 May | InterZoo 2018

Venue: Exhibition Centre, 90471 Nürnberg, Germany.

Organizer: NürnbergMesse

Contact: Jennifer Biehl, tel.: +49 9 11 86 06-80 95; fax: +49 9 11 86 06-12 0049; website: www.interzoo.com

26-28 June (Show) / 25-27 June (Education Program) SuperZoo

Venue: Mandalay Bay, Las Vegas, Nevada, USA.

Organizer: World Pet Association, 135 W Lemon Avenue, Monrovia, CA 91016. **Contact:** tel.: +626 447 2222; e-mail: attend@superzoo.org; website: www.superzoo.org

22-25 August | Aquarama 2018

(Co-located with Pet Fair Asia)

Venue: Shanghai New International Expo Centre.

Organizer: VNU Exhibitions Asia Co. Ltd., Business Mansion, Shanghai Exhibition Centre, 1333 Nanjing Road (W), Shanghai 200040, P.R. China.

Contact: Yannick Verry, International Sales and Marketing Manager, tel.: +86 21 6195 6016; e-mail/skype: Yanick.verry@vnuexhibitions.com.cn; website: www.aquarama.com.cn

7-9 September | MACNA

Marine Aquarium Conference of North America 2018

Venue: Westgate Resort & Conference Center, Las Vegas, Nevada, USA.

Organizer: Marine Aquarium Societies of North America (MASNA), P.O. Box 105603 #18350, Atlanta, Georgia 30348-5603.

Contact: website: www.magnaconference.org/2018

23-24 September | PATS

Venue: Telford International Centre, Shropshire, England.

Organizer: Impact Exhibitions & Events Ltd., Unit A2 Speldhurst Business Park, Langton Road, Speldhurst, Kent, TN3 0AQ.

Contact: Annie Foord, tel.: +44 (0) 1892 862 848; e-mail: annie.foord@impact-exhibitions.com; website: www.patshow.co.uk



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**Ornamental Fish International
is a worldwide organization
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of the ornamental aquatic
industry.**

Advertising rates for OFI Journal and banner in the OFI website

(Prices for members in parentheses)

Prices in Euro	In one issue	In 2 issues	In 3+ issues
Full page	950 (570)	840 (555)	760 (500)
Half page	605 (400)	540 (355)	490 (325)
Quarter page	385 (270)	360 (240)	325 (220)

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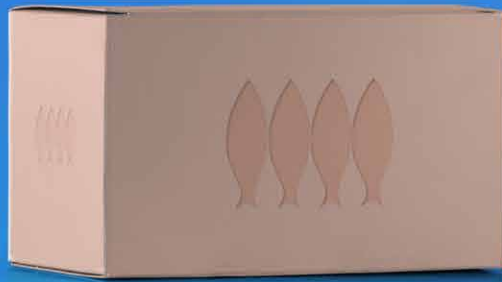


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