Buy a Fish, Buy a Coral, Save a Reef: The Importance of Economic Incentives to Sustain Conservation

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I. INTRODUCTION

Good afternoon, ladies and gentlemen. It is a pleasure to be here at the 2nd International Marine Ornamentals Conference and to join those of you who share a special interest in the marine life that comes from coral reefs. It is also a pleasure to stand before you today not only as a conservationist, but as an avid scuba diver and as the proud owner of a 200-gallon saltwater aquarium.

As aquarium keepers, business people, conservationists, government representatives, scientists and educators—we each view coral reef marine organisms from slightly different perspectives. However, we all agree that it is important for our hobby, our business, our environment and our communities to keep these resources healthy not only for today but for tomorrow as well.

For this reason, the World Wildlife Fund (WWF) four years ago spearheaded a coalition of other international conservation organizations, public aquariums, hobbyist groups, industry representatives and government agencies to form the Marine Aquarium Council, also known as MAC. Among the key concepts behind MAC is the belief that the private sector has a vast potential to become a major—if not the leading—force for conservation.

Today, I am extremely pleased to present to you the fruition of MAC's efforts over these past four years, an effort that WWF was able to support through funds obtained from several institutions including the U.S. Agency for International Development, the David and Lucile Packard Foundation, and the John D. and Catherine T. MacArthur Foundation.

For today we are launching the MAC international Certification system for the marine aquarium trade and unveiling the MAC Certification label.

The MAC label will enable consumers worldwide to easily identify marine aquarium organisms that were collected in an environmentally safe manner and handled to ensure optimal health.

By purchasing organisms with the MAC Certification label, consumers will be able to buy a fish, buy a coral and, by so doing, help save a reef.

While the concept of "buying" to "save" may seem like a paradox, during its 40 years of involvement in conservation projects worldwide, WWF has come to recognize—and embrace—the importance of economic incentives to sustain conservation.

The MAC Certification system was developed with input from all stakeholder groups throughout the world. Now it is time to put this system to work and for all parties with a vested interest in conserving coral reef resources and their habitat to support it and make it succeed.

Before we unveil the MAC Certification label and discuss ways you can help support MAC Certification, I would like to reflect on the importance of coral reefs and the need to protect them.

II. NEED TO SAVE CORAL REEFS

Coral reefs are among the biologically richest ecosystems on earth. They are a source of biodiversity, food, environmental protection, recreation and potential medicinal products. Throughout much of the world, communities and governments are dependent on them for subsistence, jobs, products and revenue. Tragically, as important as they are, coral reefs are also under ever increasing threat due to global warming, coastal development, destructive fishing practices and other human-related activities.

Dubbed "the rainforests of the sea," coral reefs consist of about 800 species of stony corals. They are home to about 4,000 species of fish—more than a quarter of all known marine fish species—as well as an incredible variety of sponge, mollusks and other invertebrates. And that is only the known species, for there are many yet to be discovered. Coral reefs and associated habitats also help to support important charismatic species that are loved the world over such as marine turtles, dugongs, rays, whale sharks and others. Estimates of total diversity of reefs range up to 2 million species.

In recent years scientists have begun to more closely examine the biodiversity of coral reefs in search of cures for human diseases. Coral reefs are especially promising because the chemicals that many of them produce may contain important biochemical compounds. Recently, up to one-half of all new cancer drug research focused on marine organisms—and much of this targeted coral reefs.

Besides being rich in biodiversity, coral reefs are productive biologically in volume.

In fact, one square kilometer of healthy coral reef can produce up to 37 metric tons of fish.

Most coral reefs are located in developing countries, and much of the world's poor depend directly on reef species for protein. Even though coral reefs occupy less than one quarter of 1 percent of the marine environment, they contribute about one-quarter of the total fish catch—feeding as many as one billion people in Asia alone.

Additionally, coral reefs protect coastal communities from storms and wave action and reduce the impacts of global warming by incorporating carbon dioxide through photosynthesis and carbonate production. Furthermore, through natural carbonate sediment production, reefs create an important recreational item—thousands of miles of white sandy beaches.

The direct and indirect benefits of reefs have an estimated value of $375 billion each year.

One square kilometer of healthy coral reef in Indonesia is worth an estimated $12,000/year in fisheries production alone.

Therefore, maintaining the health of coral reefs so they can continue to support food production and the employment and income benefits of fisheries is an important issue, especially in developing countries.

Another industry that is important to developing countries is reef-based tourism. Until the September 11 tragedy, tourism was the largest and fastest growing sector of the global economy and it was largely focused on the coast, often in coral reef areas. For example, Florida's 220-mile long reef tract generated $1 billion in annual fishing and tourism revenues. Australia's Great Barrier Reef attracts more than 2 million visitors per year and is worth about $600 million annually.

Reefs also yield a host of other "products." Sand, gravel and limestone rock are extracted for a variety of construction purposes. Other products include coral and shell jewelry, tourism curios and, of course, marine ornamentals.

III. STATE OF CORAL REEFS

Despite their importance to humans, or perhaps, because of their importance, coral reefs worldwide are in trouble today.

- 58 percent of the world's reefs are potentially threatened by human activity—ranging from coastal development, destructive fishing practices and climate change to overexploitation of resources, marine pollution, and runoff from inland deforestation and farming.

- Coral reefs of Southeast Asia, the most species-rich on earth, are the most threatened of any region. More than 80 percent are at risk, primarily from coastal development and fishing-related pressures.

- At least 11 percent of the world's coral reefs contain high levels of reef fish biodiversity and are under high threat from human activities. These "hot spot" areas include almost all Philippine reefs, as well as many of the reefs in Indonesia, Tanzania, the Comoros, and the Caribbean.

A large part of the problem is due to the increased size of the human population and their growing concentrations along the coast.

Overall, nearly 40 percent of the world's inhabitants—over 2 billion people—live within 100 km of the sea. Almost half a billion, or 8 percent of the total global population, live within 100 km of a coral reef.

Coastal development near coral reefs poses a range of threats. The most obvious are the human activities that directly destroy reefs, such as the construction of airports and other landfill projects on top of reefs; dredging for harbors; and extracting sand, gravel and limestone rock for construction materials.

Human activities that indirectly impact coral reefs are even more damaging and widespread.

Coastal development, such as shoreline construction and the clearing of inland watersheds, creates erosion and flooding conditions. Sediment and nutrients that are discharged into reef waters can smother the corals. They also reduce the light levels needed for coral growth and the establishment of new corals. Likewise, sewage and upland sources of excess nutrients, such as agricultural runoff with fertilizer, can create algae "blooms" that block sunlight and reduce coral growth.

Another pervasive human activity with indirect effects on coral reefs, including those found in remote areas, is unmanaged fishing. Overfishing can cause shifts in fish size, abundance and species composition within reef communities. When nonselective fishing methods are used, large numbers of other species, along with the targeted species, may be swept up in nets or killed by poisons or explosives in the process. The removal of key species may ultimately create ecosystem level changes. For instance, in the Caribbean, excessive removal of algae-eating fish led to algae-domination that has smothered coral in some areas.

Additionally, reefs are directly destroyed by some fishing methods, such as fishing with dynamite, fishing with cyanide and other poisonous chemicals; muro-ami netting (pounding reefs with weighted bags to scare fish out of crevices); and trawling.

Even untrained, careless snorkelers and divers can trample coral reefs, and boat anchoring on coral reefs can cause direct destruction.

Global climate change is another emerging threat to coral reefs. Climate change will likely elevate sea surface temperatures in many places, causing sea levels to rise and increasing the frequency and intensity of storms. Already we have experienced unusually high water temperatures caused by severe El Niño oceanographic events, which are likely due to global warming. These high water temperatures have been linked to the bleaching of corals, which is a phenomenon that occurs when stressed corals expel their zooxanthellae. During a 1998 bleaching event, up to 90 percent of reef coverage was destroyed in some areas. Fortunately, reefs are recovering even after being hit badly by this event.

In many cases it is difficult to pinpoint the exact causes of the serious declines in coral reef health occurring around the world. Frequently, there is no single cause but a combination of factors that leaves reefs vulnerable to periodic natural disturbances such as temperature extremes, hurricanes, cyclones and other natural events.

Many argue that of all the threats to coral reefs, the marine aquarium industry is one of the least threatening. In fact, impartial studies have concluded that "in comparison to other extractive and destructive impacts on coral reefs, … the effects of collecting live coral for the aquarium trade are very small" and that the global coral trade has "little long term impact."

But the more important point about the marine ornamental industry that we should focus on today is not its innocuousness but rather its great potential to create incentives for larger ecosystem conservation. This ecosystem conservation itself can be the critical element that not only saves biodiversity but also protects the marine ornamentals industry.

Think about it. A threat to coral reefs, regardless of its source, is a threat to the marine ornamentals industry because destruction of coral reefs leads to loss of marine aquarium organism habitat and eventual loss of target species themselves. Threats to coral reefs not only attack biodiversity, they attack the industry that many in this room—as well as numerous local communities around the world—depend on for livelihood. Speaking simply, if the reef dies, we would all go under.

The marine ornamental industry; however, has vast potential not only to become sustainable itself but also to create an anchor for broad coral reef protection. This protection will in turn protect not only the industry itself—but other sustainable, reef-dependant activities as well—and create a win-win solution for all coral reef stakeholders.

IV. WWF APPROACH TO CONSERVATION

WWF has been first and foremost concerned about protection of nature but we recognize that humans are an integral part of the ecosystem and have particularly deep cultural and economic ties to marine ecosystems. As a result, one of the key approaches

WWF takes is to find the overlap between the biological and economic values of an area considered important for conservation.

In its 40 years working to address environmental issues, WWF has learned that conservation requires more than protecting individual species and their habitats if it is to be successful for the long term.

First, conservation must be linked with development. Protected areas cannot be separated from their social, economic and political contexts, and they cannot survive indefinitely in a sea of human need. To this end, WWF created programs, such as the Wildlands and Human Needs program established in 1985, to address the needs of people living in and around the world's most precious habitats. Model projects throughout Latin America, Africa and Asia demonstrate that the economic circumstances of rural people who share their land with wild animals can be improved without degrading the natural habitat.

Second, conservation must address the global market and consumer forces that dramatically affect the environment and the economic incentives that underlie these forces. Therefore, WWF has supported the efforts of the Forest Stewardship Council (FSC) and the Marine Stewardship Council (MSC) to create markets for environmentally sound forest and food fish products.

It is clear from these and other lessons learned by WWF that a sustainable marine ornamental industry could provide critical incentives for the conservation of coral reefs. When communities derive economic benefits from a resource, they become predisposed to participate in protection of those resources. For example in one coastal community in the Philippines, marine ornamental fishermen through community-based efforts have established closed seasons and limited access to collection areas. However, not all communities are equipped to organize conservation on their own and so other protection efforts must be pursued as well. The marine ornamental industry, by giving value to the sustainable use of coral reef resources, sets a climate for such partnerships between the private sector and non-government as well as government organizations. This is an especially important factor for coral reefs, as many countries lack the capacity to successfully undertake resource management and enforcement efforts in the remote areas where many coral reefs are found.

The collection, export and keeping of coral reef animals have numerous benefits that are often overlooked by those criticizing the trade and hobby.

Collecting and exporting marine aquarium organisms in developing countries creates jobs and income in rural coastal areas that have limited resources and economic options. There are an estimated 7,000 collectors in the Philippines, many of them supporting families. A UNESCO report estimates the number of people in Sri Lanka directly involved in the export of reef animals is as high as 50,000.

In addition, aquarium animals are the highest value-added product possible to harvest sustainably from coral reefs. Aquarium fish sell for $248 per pound compared to food fish at $3 per pound. Likewise, on average, live coral is worth $3.50 per pound, while crushed coral for lime sells for 3 cents per pound. Collectors, therefore, have strong financial incentives to ensure that stocks of marine aquarium organisms and their environments remain healthy.

Furthermore, in developed countries, public and private marine aquariums depend on wild-caught marine aquarium organisms for 98 percent of the reef animals in their tanks. Often these marine aquariums are a primary source of knowledge about coral reef organisms and ecosystems for the people in these countries. Their existence contributes to conservation awareness for coral reefs worldwide.

On the other hand, the loss of the marine aquarium industry would eliminate jobs and, quite likely, the stewardship incentive. This could leave rural, coastal areas open to more destructive uses and to increased environmental degradation. Eliminating the community's high value-added aquarium fishery would contribute to the poverty that drives people to use destructive fishing practices, such as blasting, to gather food for the community. Eliminating economic options where few exist can also contribute to the out-migration from rural coastal areas to already over-populated urban areas.

V. HOW MAC CERTIFICATION WORKS

I hope by now I have conveyed to you how economic forces can be harnessed to facilitate positive global environmental change.

At this point, I will not spend time summarizing the MAC Standards or specifying the many conservation and socio-economic benefits it provides. You will have ample opportunities during the conference to learn about these details from the MAC staff from the Philippines, Indonesia, the South Pacific, Hawaii, Washington, DC, and Europe who are here to give presentations and staff the MAC booth at the trade show.

Instead, I would like to stress several elements that are critical to the success of the MAC Certification system. All stakeholder groups involved in the marine ornamentals industry can benefit from the MAC system, but, to do so, we must each do our part:

- For those with an aquarium at home or in the office the MAC Certification label for marine ornamentals provides you with a means to identify organisms that were collected and handled in a manner consistent with the long-term conservation and sustainability of coral reefs and their adjacent community. Through your purchasing power, you can elect to reward responsible industry operators and force those who are irresponsible to change their ways. We ask you to demand and purchase only MAC Certified marine ornamentals. You will benefit, by having a fish or other coral reef organism that is likely to live much longer and be

much healthier than organisms caught through destructive means (such as the use of cyanide).

- For the marine aquarium industry the MAC Certification system provides you with a set of internationally approved environmental and quality standards for the collection of living marine organisms. I am pleased to be able to announce that in the past month 33 companies in nine countries, including 17 wholesalers in the United States who together account for one-third of the US importing capacity, have already signed Statements of Commitment to become MAC Certified. We applaud these collectors, wholesalers and retailers. By becoming MAC Certified you are not only ensuring the future of coral reef ecosystems, you are ensuring the future of your business. Also, as consumers become more aware of the importance and availability of MAC Certified Organisms, certified companies will reap the rewards of consumer demand and confidence in their practices and products. We challenge all others in the industry to acknowledge the winds of change, to seek certification and to provide consumers with MAC Certified marine ornamentals.
- For conservation organizations, as I've noted earlier, when communities derive economic benefits from a resource, they become motivated to protect those resources. By attaching an economic value to the sustainable use of coral reef resources through the MAC label, the marine ornamental industry is helping create an economic incentive for effectively conserving coral reefs worldwide. We challenge conservation organizations to partner with local communities that depend on marine aquarium resources and to help them not only to embrace MAC certification but also to protect the greater coral reef ecosystem from its myriad threats. This will protect biodiversity, while ensuring the long-term sustainable use of the marine resources these communities depend on for their livelihood.
- For public aquariums, the MAC Certification system provides you with an important tool for educating the broader public about the plight of coral reefs and the economic and environmental benefits of a responsible marine aquarium industry. This also demonstrates your commitment to in-situ conservation, thus enhancing your public profile. We ask you to not only purchase MAC Certified organisms but also to actively help educate the general public about the significance of MAC certification.
- For government agencies, not all governments have sufficient financial resources to effectively protect the environment. Many are now recognizing the importance of public-private partnerships to help achieve the goal of protecting the environment. You will benefit greatly in your natural resource management mandate by helping to create the enabling environment for the private sector to pursue marine conservation. We ask that governments actively encourage the adoption of MAC Certification through supportive legislation and policies. This will help support efforts by rural communities and businesses to protect the environment for everyone's benefit.

If we all work together we can continue to have healthy populations of fish and corals and save these "Rainforests of the Sea" for present and future generations.

And now, ladies and gentlemen, I am pleased to unveil the MAC Certification label.