

INTERVIEW

Marine biologist CHRISTIANE SCHMIDT on the Disney-Pixar movie *Finding Dory*

Many European reefkeepers

know Christiane Schmidt as the founder of SAIA, an international association of aquarists, scientists, and industry representatives working to ensure more environmental protection and sustainability in the aquarium trade and hobby. Schmidt is familiar with these issues due to her years of field work in Southeast Asia. After studying at the Centre for



Marine biologist Christiane Schmidt, founder of SAIA, the Sustainable Aquarium Industry Association, based in Germany.

Above, right: The SAIA's request for funds to study population and fishery data on *Paracanthurus hepatus*.

Tropical Marine Ecology in Bremen, Germany, she worked for importers in France and Germany for several years. From 2005 to 2008 she worked for the Marine Aquarium Council (MAC). Since then she has visited Indonesia and the Philippines regularly and become well acquainted with the local fishermen and exporters. We talked with her about the effects that Disney-Pixar's new movie *Finding Dory* could have on the marine aquarium trade and about the objectives of her campaign "All Eyes on Dory."

CORAL: Ms. Schmidt, we all remember the movie *Finding Nemo*, which was released in May 2003 and influenced millions of children's perceptions of coral reefs. This blockbuster earned over \$70 million on opening weekend, and 28 million DVDs were sold in 2003 and 2004 combined—a huge business based on one anemonefish. It was only a matter of time before Disney-Pixar would launch a sequel. Are you looking forward to the film?

Christiane Schmidt: Like many other people, I always enjoy a great animated movie. Dory captured my heart when I saw *Finding Nemo*. She is a wonderful fish—both as a cartoon character and in real life—but along with the euphoria I felt nausea. The release of *Finding Nemo* had consequences for clownfish at the time, and I fear that this could be repeated with *Finding Dory*.

CORAL: What has changed because of *Finding Nemo*—both in the minds of people and in the fish's natural habitat? Is there any research that measures its effects?

CS: First of all, one must recognize the positive impact of the film: Today even the youngest kids recognize a clownfish and a Blue Tang. Many people, young and old, know that these animals live on coral reefs. Pixar has portrayed the underwater world as pretty awe-inspiring, and people are aware of the marine habitat. The film arouses emotions and shows that likable creatures live in the sea and are worth protecting.

However, *Finding Nemo* also caused a sudden rush to buy anemonefish.¹ The story made many want to own a genuine Nemo. Many even believed that Nemo could be flushed down the





Young "Dory" specimens in the trade.

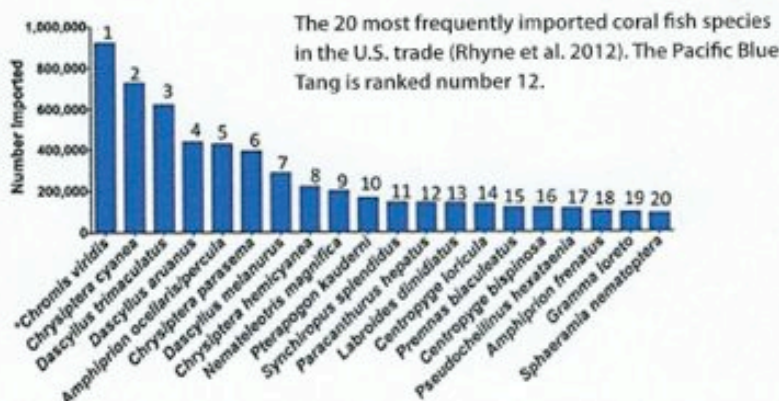


Figure 2. Top 20 marine aquarium fish imported into the United States. * Indicate species complexes, which could represent more than one species which are all traded under the same name. doi:10.1371/journal.pone.0035908.g002

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toilet and end up in the wild, as shown in the movie! Thousands of clownfish probably paid with their lives for this human ignorance—Nemo was loved to death, so to speak. It's hard to quantify the decline in wild anemonefish stocks caused by the film. There are no data on the population status of many coral fish species or on the overall catch in the main fishing countries, Indonesia and the Philippines.² At least in the case of Nemo, the natural resources can be conserved because the demand can be met through tank-raised livestock. I cannot understand why some pet dealers still offer wild clownfish.

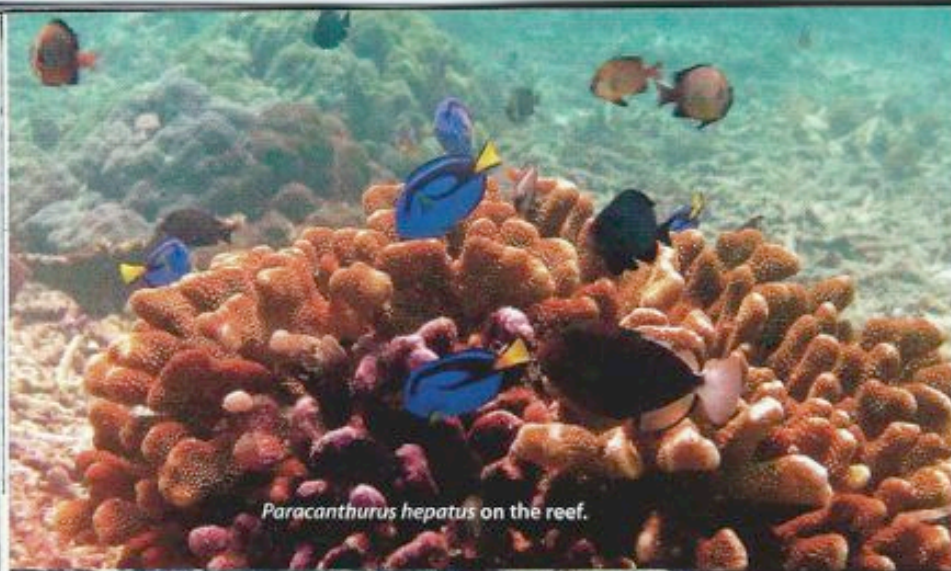
CORAL: Your SAIA campaign calls attention to the threat to the Blue Tang (*Paracanthurus hepatus*). Why should we worry about Dory?

CS: I am concerned with two things: one, dwindling stocks and undocumented and unregulated catches, and two, the unsuitability of the Blue Tang for the home aquarium. In the United States, the Blue Tang is number 12 on a list of the most commonly imported marine aquarium fishes. In Europe, more than half of all aquarists keep surgeonfishes or tangs, including *Paracanthurus hepatus*.³ All of these come from the wild because, unlike clownfishes, tangs are rarely bred in captivity. Global warming and ocean acidification are already putting a great burden on the reefs and their inhabitants. Indonesian

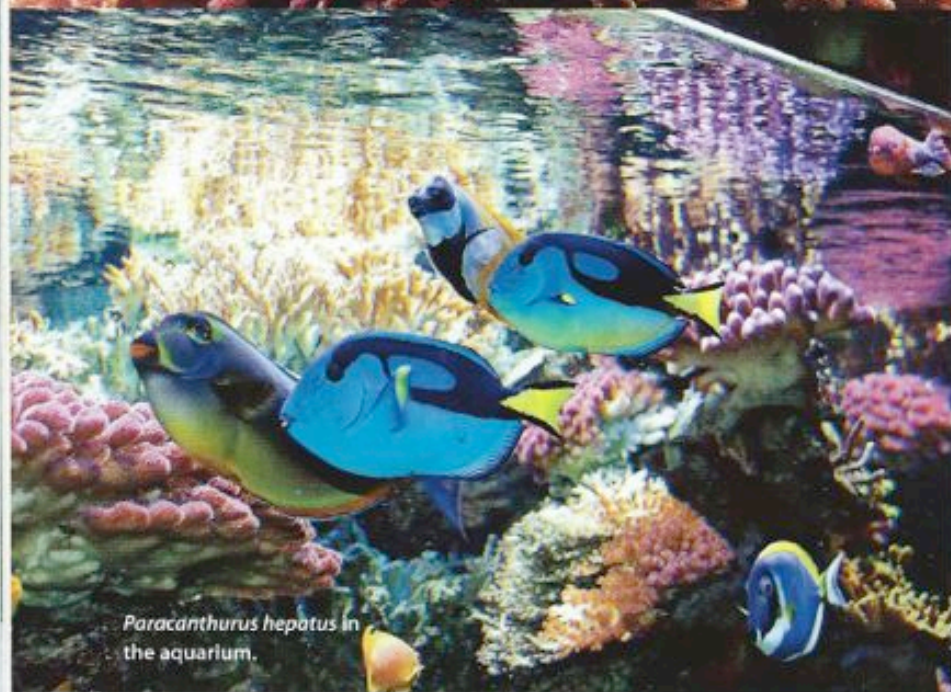
fishermen and exporters told me last year that they had to go into ever more remote fishing areas to provide the desired number of *P. hepatus*. The World Conservation Union (IUCN) acknowledges that local populations most likely would not be able to cope with an increase in demand like that caused by the release of *Finding Nemo*. To make matters worse, stocks and catches are neither documented nor regulated—so we do not know how many of the animals actually exist.

CORAL: You mentioned the unsuitability of the Blue Tang for home aquariums. What exactly makes the maintenance of this species difficult?

CS: Blue Tangs are large, need a lot of space to swim, and are susceptible to disease. In nature, they live mainly



Paracanthurus hepatus on the reef.



Paracanthurus hepatus in the aquarium.

on seaward reef slopes that provide plenty of swimming space in a rather unspectacular landscape with only a few scattered corals. The strong current provides their preferred foods: zooplankton and algae. Such habitats cannot be duplicated easily. It would require an enormous aquarium that would be unaffordable for most hobbyists, and the abundant colorful marine life that many aquarists desire would be lacking. Despite all the excitement about this fascinating fish, hobbyists should be thinking about whether

For example, if we neglect the needs of the sweet little Dory, this fish can become aggressive or fall ill and die.

it might not be best to reject Dory as an aquarium fish.

CORAL: How can we counteract this problem? Who could make a difference here, in your opinion? Have your efforts been successful?

CS: It is very important to attract attention and raise public awareness of this problem, as it affects the commercial sector and hobbyists alike. That is the only way to reach moviegoers. Our campaign "All Eyes on Dory" has sparked great interest. Although the media are holding back, they are definitely preparing for the movie premiere. Almost every day I receive email inquiries from home and abroad. I am particularly pleased about our fruitful cooperation with the large retail chain MEGAZOO Austria, which we launched last year. MEGAZOO stopped offering Blue Tangs—a signal that sets a new standard in the marine aquarium hobby.

Since there are other fish species in the hobby that are not suitable, we will generate more surprises in the near future. Although, for economic reasons, not every retailer will decide to stop selling a given species, it should be understood that honest information should be communicated to the buyer of any fish.



Christiane Schmidt working with collectors.

CORAL: How do you assess the breeding efforts?

CS: This is a very important issue that continually causes confusion among aquarists: Blue Tangs have not yet been bred and raised in captivity. Post-larvae are often sold as tank-raised, but this is a fallacy; the fry are taken from the wild and raised in Balinese export stations to sale size (2–2.75 inches/5–7 cm) in an attempt to solve the problem of seasonal availability. The exporter can ensure a constant supply and orders can be filled at any time. Post-larvae are not truly cultivated, and loss rates are quite high. In addition, the adverse effects on local populations of catching tiny juveniles has not been studied, even in a rudimentary way.⁴

CORAL: What actions are you planning for the future?

CS: Our “All Eyes on Dory” campaign uses the film’s release to draw attention to the lack of regulation and oversight in the aquarium fishery. As I already mentioned, no one knows how many Dorys are left in Indonesia and the Philippines. Our project “Dory Assessments” aims to collect population data to measure the impact of aquarium fisheries on wild resources. I very much hope that we can accomplish this ambitious and financially demanding project. It should serve as a model for many other aquarium fish species, because the need for fisheries management must be clear to everyone. Great successes have already been achieved in Hawaii, and this good example should be followed.

CORAL: Thank you for this conversation. §

—Interview conducted by Daniel Knop

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FOOTNOTES

¹ Only figures from some fishing areas in Australia and Vanuatu are cited: www.telegraph.co.uk/news/earth/earthnews/3345594/Demand-for-real-Finding-Nemo-clownfish-putting-stocks-at-risk.html

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² Prosek, J. 2010. Beautiful Friendship. *Nat Geog* 217 (1): 120, <http://ngm.nationalgeographi.com/2010/01/clownfish/prosek-text>

³ According to a 2012 study, around 85 percent of all European aquarists maintain a clownfish and 57 percent keep a representative of the family Acanthuridae. Rhyne, A.L., et al. 2012. Revealing the appetite of the marine aquarium fish trade: The volumes and biodiversity of fish imported into the United States. *Plos One* 7 (5): e35808, doi: 10.1371/journal.pone.0035808

⁴ Mostly small juveniles are collected, rather than post-larvae. They are easier to catch, since they often live in larger groups between *Pocillopora* or *Acropora* corals. In many fishing areas the juveniles are mainly available in December.

REFERENCE

SAIA Campaign “All Eyes on Dory”: <http://www.saia-online.eu/index.php/en/what-we-do/campaign>