

HOW TO TRAIN YOUR FISH

FEATURE **PATRICK VAN HOESERLANDE** PHOTOGRAPHY **AMBER VAN HOESERLANDE**



During a training event for volunteer divers, we were given a presentation on how the Virginia Aquarium & Marine Science Center staff trains a cobia. The cobia is a fast, aquatic predator that is not situated at the top of the marine food chain. Regardless of the relative position in that chain, it surprised me that you could train a fish. How do you train a fish? Is that possible with all fish? Why would you do that? Time to dash off in search of answers.

Working as a volunteer in the Virginia Aquarium & Marine Science Center has the advantage of quick access to specialists that I can address for some answers. In a short span, I successively interviewed Lori Semple, Michelle Coley, and Betty Alexander. All three are animal trainers in the public aquarium that attracts many visitors each year. Michelle is an aquarist and responsible for training fish like sturgeon, cobia and rays. Lori, also an aquarist, specializes in the training of sea turtles, while Betty takes care of training the seals. All three get to answer my questions about training. The conversations lead me through a path of more questions and surprise.

WHY DO YOU TRAIN ANIMALS?

My question erroneously gives the impression that all animals must be trained. However, this is not always the case. Only animals that are expected to remain in human care are trained. Turtles or seals that are rehabilitated, and therefore expected to be released, should never receive training. Through the process of training, they will get used to human interaction, something that wild animals should not be taught. If an animal, due to injury or deformity, can never survive in the wild, or was born in human care, it is a candidate for training.

Almost all animals can be trained, but for some species, it is very difficult or too time-consuming. Schooling fish respond better to triggers produced by other fish in the school, rather than external stimuli from the trainers. These species require a very long time to train with meager results; therefore the investment usually does not outweigh the potential benefits. An example in this aquarium was the training of a barracuda. There was some success after intensive training, but as soon as the individual fish was placed in a large exhibit, he quickly preferred following other fish over reacting to the trainer.

Solitary hunters have the best chances of success. They are, after all, used to responding to external stimuli and are less prone to being distracted by peers. Additionally, turtles and marine mammals are very receptive to training.

Just because an animal can be trained, does not mean that it has to be. Training is very labor intensive, and before starting with it, both the institution and the animal need to benefit from it. Large animals that need special, individual care are prime candidates for training, especially, when they represent a great financial or reputational investment for the institute. Animals that need variation in their environment to prevent boredom are also candidates to be trained.

The decision to train an animal may be from a combination of reasons. The animal may need a customized diet, necessitating managed feedings. This can be a certain amount of food per day, but also a certain kind of food. It may also be that the fish is so fast that it pilfers food from other fish, causing stress and loss of dietary control.

Another reason is the daily task of mental and physical enrichment. This is especially the case with intelligent animals like seals, who require enrichment to thrive. Although the public enjoys it, the purpose of these trained behaviors is not to give a show. Rather, the spectacle of learned exercises simulates natural behavior and contributes to the welfare of the animals.

The human care for the wellbeing of animals is also the basis for the reason why an animal receives training: the need for medical treatment and transportation. Even animals in an aquarium must visit the vet from time to time. Such visits and associated examinations, are not normal situations for a fish. These are a source of stress that can affect its wellbeing. To limit the consequences of a medical examination, the fish must first learn that being touched by people should not cause stress. This is also the reason why an animal should be prepared for future transportation. To catch a fish in an aquarium is more difficult than one can imagine. The procedure differs greatly from catching a fish in a small bowl. In an exhibit, the whole exercise is tiresome for the divers, and very stressful for the individual fish. It's much easier for all if the fish itself swims into the net.

BUT HOW DO YOU TRAIN ANIMALS?

With patience and a positive attitude. The first challenge to overcome is finding the right external stimulus. It is not exactly known what kind of stimulus certain species best respond to: is it color, contrast, or shape? The right 'target' is one of trial and error. The target should not only attract a specific individual, it must also be different enough to not distract other trained animals. A while ago, after a fish had been trained, it no longer responded as

it was taught. Something in the environment had changed. After thoroughly searching, the animal care team discovered that the fish was distracted by the color of the T-shirt the new intern was wearing. The T-shirt, although above water, was a better target and caused confusion about where the fish should react.

Once the target has been identified, the training begins by encouraging good behavior. The first step is to submerge the target during feeding, so that the fish connects food with the proximity of the target. Then, animal care staff begin connecting 'seeing the target while eating', to 'coming to the target to get food'.

The animal must stay connected during training with the target for as long as the trainer expects. With turtles and seals, this is real physical contact with the target, while with a predator, contact means swimming around it. The desired behavior is further stimulated by 'bridges'. These bridges, such as a click sound (clicker) or a whistle, make it clear to the animal that it is on the right track and indicates the exact moment that it has done something correctly, signifying that it has earned a reward. The bridges make it obvious for the animal that it is still on the road to success, and towards a reward, encouraging the animal to watch what it's doing in order to get more bridges from the trainer. It bridges the moment of demonstrating the right behavior with the moment of receiving the reward. After a while, the bridge will be received as a 'secondary reward', substituting the food reward. The learning process is extremely fast because the signals help the animal to remain on the right track. Through this method, complex activities such as permitting an examination, injecting drugs, or transportation are taught step by step.

Finding a good bridge is not easy because, a bit like determining the right target, the bridge may only work for one animal. The effectiveness of a bridge depends strongly on the memory span of the animal. The time between a secondary and the actual reward must not be too long for a fish because it may forget the association, while with seals that time can be longer. Indeed, fish tend to behave a bit like Dory in the Disney movie, *Finding Nemo*, although there is proof of a lasting memory too.

WHAT DOES A TRAINER DO WHEN AN ANIMAL IS NOT COOPERATING?

The rule is to not punish, just ignore the negative behavior. This is accomplished by simply removing the target from the water and doing nothing for 3 seconds. In that short time you can lean back and relax. After months of training it can be frustrating when the animal refuses to cooperate, so cooling down before reacting might be a good thing. It also gives the animal a signal that it has done something wrong. Offering the target again, and acting as if nothing has happened, will usually encourage the animal to cooperate.



My interviews are followed by a few live training sessions. During such a session, I see how turtles and a cobia respond to their targets while there is food for other fish thrown into the water. Without training, the predator would hunt the other food and make it impossible to control its intake. It would also increase the stress level of the prey fish. Even if the urge to steal the food from the turtles is large, the moment the target plunges into the water, the cobia goes for it. When one of the turtles does not properly respond to a signal, the trainer stops

all activity. After resuming the session, the animal responds immediately and correctly.

I should not have been surprised to learn that fish can be trained. There are unfortunately dive sites where you, as a diver, are almost immediately welcomed by hungry fish expecting an easy meal. This unnatural behavior is an involuntary trained response to visiting divers distributing food to attract fish and it is a bad habit, because wild animals should not get used to people, but it provides clear evidence that a whole host of fish can be trained.