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Marine mammals in captivity: What constitutes meaningful public education?

Thank you Madame Chair, Members of the Committee, for inviting me to speak here today. I represent the Ocean Preservation Society, founded 5 years ago to advocate on behalf of the oceans, and on a more personal note, the diving community.

Introduction

Over 35 years I have been on nearly 1,000 dives around the world, as a photographic journalist, an Academy Award winning director and for my own recreation. And of the dozens of marine animal parks I've visited in the U.S. and around the world, none has come close to replicating the natural environment I have witnessed with my own eyes.

To know marine animals is to see them in their natural environment. Never once have I seen a dolphin flip, spit water at a human, wave goodbye with their flipper, or moonwalk. Professional divers would never feed, touch or attempt to ride an animal in the wild – it's one of the first lessons taught during dive certification – because they are not performers. They are rather, wild hunters, exceptional athletes, and some of the most social creatures on the planet. Rarely, if ever, have I witnessed a dolphin alone, or with as few members as I've seen in any dolphin park.

It is my firm belief that the way to understanding marine mammals is not achievable in a park setting. What we witness in a park setting most often – animals performing tricks because they want to be fed – is not animal behavior but rather a display of human dominance.

In this way I contend that it is also false to represent to an audience in an amusement park setting, that they are becoming educated on real animal behavior. In my experience, there are ways of exposing animals to the public that do not involve putting them in a concrete enclosure. As a photojournalist and documentarian I have endeavored throughout my career to bring diverse creatures, peoples and environments to life for my audience, in a way that engenders connection, promotes conservation or at least a social awareness of my subject.

Experience in the marine habitat

Encountering dolphins in the wild is one of the most exhilarating life experiences I have had as a diver or as a human. In the wild, the dolphin is dominant and controls the encounter. They can choose to approach, interact and disappear with more agility and grace than humans could ever hope to achieve underwater. Even our high-end equipment is of little novelty to these highly evolved creatures. In 2006 while diving with OPS Director of Expeditions, Simon Hutchins, we came upon a pod of bottlenose

dolphins in the Rangiroa atoll, (part of the Tuamotu Island group in Polynesia). Rangiroa is the second largest atoll is in the world; the tidal rush of water is epic, bringing in a host of other large animals. More than a dozen dolphins scanned us with sonar and swarmed around curiously and playfully for fifteen minutes before dashing off, much to our disappointment. At that moment we saw a great hammerhead shark headed straight for us, and the dolphin pod attacking it. Hammerhead sharks are some of the largest in the world, about 18 feet long, which is similar to the large great whites. I had seen pictures once of a great hammerhead with a gray reef shark in his mouth that made the reefer look like a child's toy. The bottlenose dolphins were large, about 8 feet long and weighed several hundred pounds, but they were dwarfed by the hammerhead. Each pod member took turns ramming the shark away from us, in a manner quite violent, and wholly distinct from their interaction with us just moments before. Dolphins can easily out swim a shark, but instead they chose to attack it.

In the wild, I have seen a pod support injured members by taking turns propping them afloat to breathe, and I've spoken to swimmers who have experienced the same live saving phenomenon when they were drowning. Dolphins remain the only known wild animal throughout history to save the life of humans.

In oceans all over the world you will see pods of dolphins by the thousands jumping and frolicking. Playing on their agile talents, dolphin shows have trained dolphins in synchronized jumping, akin to circus acts, which have caused collisions resulting in injury and death for many dolphins in captivity. Again, this behavior is not something that occurs in the wild – despite an industry representative's claim that it is "an unfortunate, random incident." – it is clearly a result of being forced to do dangerous circus-like tricks twice a day, seven days a week.

Many dolphin species have larger brains than humans. All orca whales, have larger brains than humans, and additionally, more convolutions of the gray matter allowing for sensory neurons – so they are more sensitive than us. Until recently, Spindle cells – specialized brain cells involved in processing emotions and social interaction / organization – were thought to be the sole provenance of humans and the great apes. In 2006 The New Scientist Journal published a striking article (see attached documentation) when it was discovered that orcas also have spindle cells, and in the same area of the brain as humans. Interestingly, in accounting for their larger brain size, Orcas and other whales have even more spindle cells.

Orcas, like dolphins, similarly, are extremely social in resident pods; they stay with their mothers for life. For millions of years they have evolved to be social, forage for their collective food through cooperative hunting, and communicate with sonar in a complex environment using a full array of their senses to explore and travel far. It is hard to imagine that these animals are safer alone, in a confined pool, than they are with their pod. However, many public display facilities would have you believe that they provide superior nourishment and safety, a fact that is not substantiated, and only serves their own purposes.

Throughout the history of mankind there has never been a single documented case in the wild of an orca whale killing a human being, but the Sea World Orca, Tillicum, who was taken from his mother in Iceland at the age of two, has killed three people his lifetime. The educational benefit of these unfortunate facts should be to alert everyone involved in marine mammal captivity that they are in fact responsible for inducing abnormal behavior. In explanation, the industry has drawn parallels between orcas and other wild animals that are known to be dangerous, like lions. Lions are predatory animals that have been known to hunt and kill humans throughout history. However orcas have never hunted people and certainly not ever eaten people, including the deceased trainers.

A trainer will never suffice for a mother; these are mammals, who carried their baby to term, not fish laying multiple eggs. And we know that the only thing a dolphin habitat has in common with a concrete tank is the water, except there is a lot less water in Orlando and Las Vegas where Sea World dolphins are rented out. After a "Show" at many of the public display facilities, which are also members of AZA and The Alliance of Marine Mammals and Aquariums, I have witnessed dolphins baking in the tropical sun in shallow pools with no shade protection, and observed these otherwise gregarious social animals floating in isolation at the surface or dragging their rostrums around the edge of the concrete.

If the behavior of Tillicum was the aberrant behavior of one individual you could perhaps dismiss it as a statistical anomaly. However just two months before, on the day before Christmas, another Sea World orca, one of four rented out to an aquarium in the Canary Islands, killed another trainer. An article in USA Today last week highlighted a long history of trainers being maimed, injured and killed. It is irresponsible of those in the captivity industry to compare orcas and dolphins to playful happy pets who do tricks for food when it serves to entertain an audience, and then compare them to wild predatory animals when they need an explanation for extreme and abberrant behavior. From dolphin collisions to orca attacks, the question is not whether but when the next tragedy for marine mammals in captivity will occur.

The live experience does not constitute a necessary part of education

If our goal is to educate the public on marine mammals, to engender compassion and promote conservation, then we must think seriously about the "message" conveyed by marine mammal parks. We must think about how we educate, and how we make the greatest impact. It can be a subjective question, however, we do not find it necessary to furnish parks with deserts and arctic tundra in order to explain geography, nor to bring dinosaurs back from the dead to explain them.

One of my areas of expertise is the Mesozoic Era, or the mid-life of the planet, commonly known as the Age of Dinosaurs. I have done four stories for National Geographic on this era and by readership surveys conducted by the magazine, a few rank among the most popular stories in the magazine's history. I also authored a best-

selling book, *Hunting Dinosaurs* that was extremely popular with children and scientists alike. And although the last dinosaurs died 65 million years ago, public interest in them has never waned. And so, the argument that people must have first hand experience these animals in order to appreciate them is not substantiated by the facts. We hold marine mammals on public display simply because we can.

The ethics of riding atop a wild animal in a spandex suit with loud music blaring cannot be reconciled under the banner of education or conservation because it goes against everything we are trying to teach our children about these animals. If provoked in the wild these encounters would and should result in arrest.

Jacques Cousteau famously said, ""There's about as much educational benefit studying dolphins in captivity as there would be studying mankind by only observing prisoners held in solitary." Viewing marine mammals in captivity tells us nothing of the animals' actual habits and behaviors. What we see is animals becoming domesticated, losing their evolutionary edge, and above all being dominated. Public display facilities are misrepresent themselves as educators because we haven't set up the legal structure to hold them to a higher standard.

Self regulation: A conflict of interest

As children and adults we are admonished that feeding animals in the wild encourages and promotes abnormal behavior that may even result in personal injury or death. For these reasons, it is also illegal in many places. Neither is it allowable to feed wild animals in zoos, in fact you would be thrown out of any zoo if you did. Nonetheless many dolphin parks allow random feeding by paying customers. How is it that feeding wild animals is bad and dangerous but if they pay $70.00 to a dolphinarium it is education? This is not education; it is, more accurately, a manipulation of fact for the benefit of purely financial enterprise.

One of the founders of the Alliance of Marine Mammal Parks and Aquariums, has been one of the world's largest dolphin traffickers. He provided animals from the infamous dolphin drive hunts in Taiji and Iki, Japan, to Sea World, the Indianapolis Zoo, a dolphin park in Hawaii and the U.S. Navy. I know quite a bit about Taiji. Over a three-year period I made seven trips to Taiji for the Academy Award winning film that I directed called The Cove. Our film was named for the now infamous secret cove in a Japanese National Park that is the site of the largest dolphin slaughter on the planet – its also the center of the captive dolphin industry. Any dolphin originating from Taiji, seen performing in a public display facility or amusement park is, without question, the last surviving member of its pod. Every single one of its relatives, not chosen for the captive dolphin industry, would have been killed in the most violent way imaginable, which we went to great lengths to portray, in all its graphic accuracy. The economic underpinning of Taiji's dolphin slaughter is the trafficking of dolphins for public display facilities.

The law that allows for the public display of marine mammals was established without the benefit of scientific research that we have before us today. We know far more about

these intelligent sentient creatures now than we did in 1972, and 1994. Ironically, much of what we have learned about their cognitive abilities was learned in zoo and aquarium research facilities. Therein lies a major conflict of interest for the industry: when you begin to understand what these animals are truly capable of and then continue to pull them out of the wild and force them to do tricks for our amusement, it says more about our intelligence than theirs.

It is prudent now that we consider whether these facilities would still constitute viable businesses if a larger role was established for education and the “circus shows” were banned altogether. Because while it may be said that public support for marine mammals increased over the last several decades, the same cannot be said for the environment in which the animals live. Environmental degradation has continued at an alarming rate. It can only be assumed that people are not making the connection that in order to protect these animals, we must first protect their environment. It seems no great coincidence that this disconnect was inspired by the false impression of sanctuary represented by public display facilities.

I strongly urge you today to take action in establishing regulated oversight of the education programs for public display facilities of marine mammals. Under the current law they have been allowed to become denigrated circus animals that serve our amusement rather than our education.

Whales boast the brain cells that 'make us human'

15:00 27 November 2006 by **Andy Coghlan**

Whales may share our kind of intelligence, researchers say after discovering brain cells previously found only in humans and other primates.

They were touted as the brain cells that set humans and the other great apes apart from all other mammals. Now it has been discovered that some whales also have spindle neurons - specialised brain cells that are involved in processing emotions and helping us interact socially.

Spindle cells, named after their long, spindle-shaped bodies, are the cells that are credited with allowing us to feel love and to suffer emotionally. Their discovery in whales will stimulate debate both on the level of whale intelligence and on the ethics of hunting them.

The cells occur in parts of the human brain that are thought to be responsible for our social organisation, empathy, speech, intuition about the feelings of others, and rapid "gut" reactions (see *The cell that makes us human*).

Anthropomorphic angle

Now it turns out that these spindle cells also exist in the same brain areas in humpback whales, fin whales, killer whales and sperm whales.

What is more, whales appear to have had these cells for at least twice as long as humans, and early estimates suggest they could have three times as many spindle cells as us, even accounting for the fact that whale brains are larger than ours.

"It's absolutely clear to me that these are extremely intelligent animals," says Patrick Hof of the Mount Sinai School of Medicine in New York, and co-discoverer of the whale spindle cells with Estel van der Gucht of the New York Consortium in Evolutionary Primatology, both in the US.

"We must be careful about anthropomorphic interpretation of intelligence in whales," says Hof. "But their potential for high-level brain function, clearly demonstrated already at the behavioural level, is confirmed by the existence of neuronal types once thought unique to humans and our closest relatives."

"They communicate through huge song repertoires, recognise their own songs and make up new ones. They also form coalitions to plan hunting strategies, teach these to younger individuals, and have evolved social networks similar to those of apes and humans," Hof says.

Express trains

As with humans, the spindle cells were found in whales in the anterior cingulate cortex and frontoinsular cortex - two brain regions vital for "visceral" reactions. Such reactions require fast but emotionally-sensitive judgments, such as deciding whether another animal is suffering pain, and the general feel of whether an experience is pleasant or unpleasant.

In addition, unlike in humans, the researchers also found spindle cells in the frontopolar cortex at the back of the brain, and they were sparsely dispersed elsewhere. Hof says he does not yet know the significance of spindles found in areas other than those that contain the cells in humans and great apes.

Exactly how spindle cells function in whales is still under investigation, but Hof believes the long, high-speed connections may fast-track information to and from other parts of the cortex. "The velocity of the signal is faster, and they miss out junctions on the way," says Hof. "They are like the express trains' of the nervous system" that bypass unnecessary connections, enabling us to instantly process and act on emotional cues during complex social interactions.

Hof and van der Gucht suggest that whales probably evolved the spindle cells completely independently of humans and apes - a process called convergent evolution. Moreover, they probably evolved them as long as 30 million years ago, twice as long ago as humans and apes.

Spindle cells are most likely to emerge in unusually large brains which need extra circuitry to handle increasingly complex social interactions, Hof says.

Cognitive parallels

"The discovery of spindle neurons in cetaceans is a stunning example of neuro-anatomical convergence between cetaceans and primates," says Lori Marino of Emory University in Atlanta, Georgia, US. "The common ancestor of cetaceans and primates lived over 95 million years ago, and such a highly specific morphological similarity as the finding of spindle cells is clearly due to evolutionary convergence, not shared ancestry," she says.

"This is consistent with a growing body of evidence for parallels between cetaceans and primates in cognitive abilities, behaviour and social ecology."

However, many highly intelligent but smaller cetaceans examined by Hof and van der Gucht did not have the spindle cells. The explanation could be that these smaller cetaceans, including bottlenose dolphins, evolved different but equally complex alternatives to the spindle cells. "In this respect, it will be interesting to discover what mental capacities might distinguish humpback whales from dolphins," says Keith Kendrick of the Babraham Institute in Cambridge, UK.

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